Second-order learning in developmental evaluation for community-based sustainability

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It is unlikely that any significant piece of academic scholarship is solely the work of one person, and doubtless the present submission would be impoverished without the support and contributions I have been privileged to benefit from by those listed below.

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"*We are all passengers on an aircraft*
we must not only fly but redesign in flight"
(Sterman, 2010: 4)

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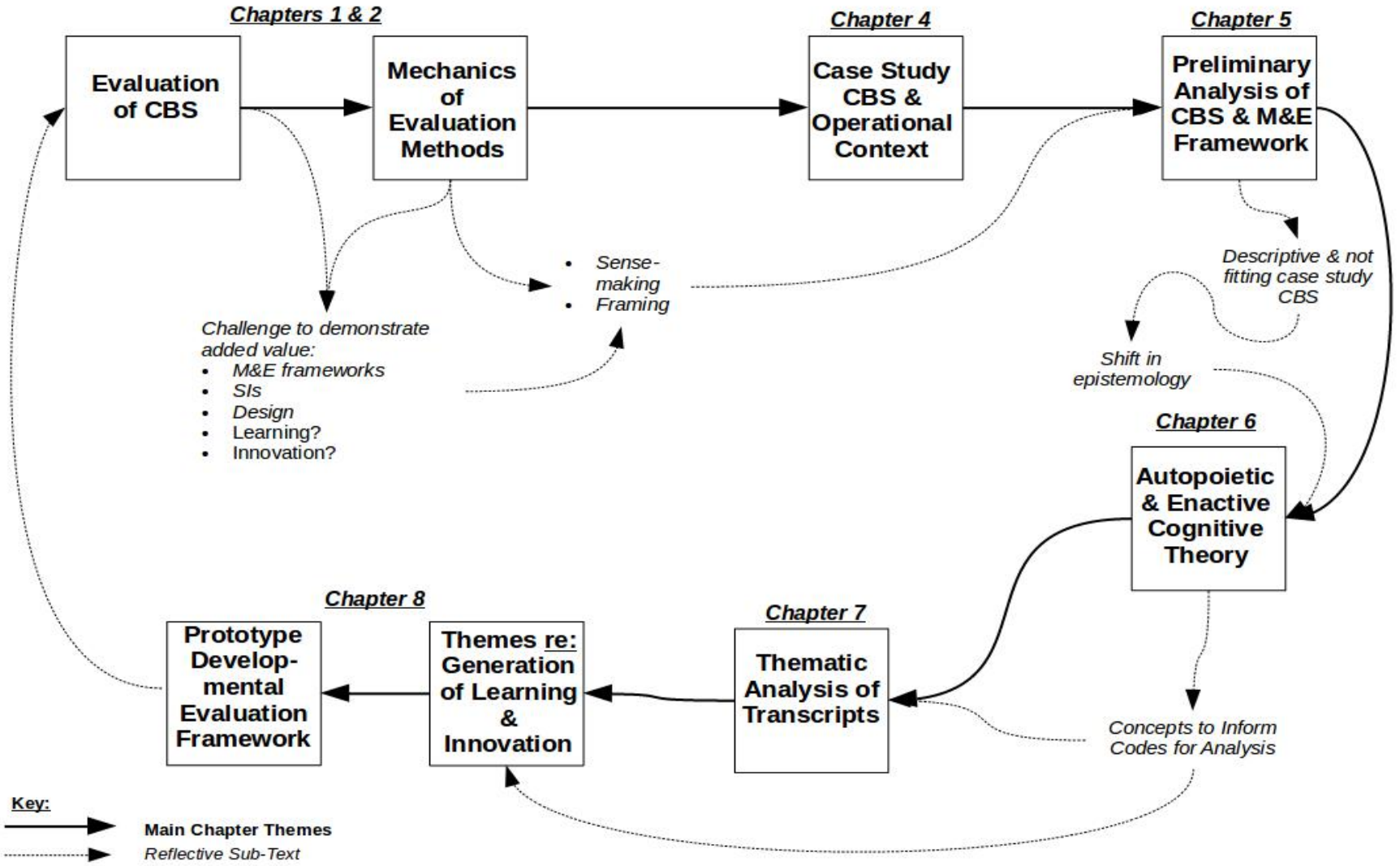
ABSTRACT:

It is increasingly common for complex social, economic and environmental policy concerns to be delivered via funded community-based projects. A project's contribution is typically monitored and evaluated relative to pre-defined outcomes, supported by a set of indicators. Available research suggests that when judged against such criteria, the performance of many funded international developmental and community-based sustainability (CBS) projects are variable, with evidence suggesting that changes elicited are negligible in duration, type, and scale. However, evaluating project performance relative to pre-defined outcomes may overlook the practical learning accumulated by actors in realising key objectives under conditions afforded by the operational context. To address this gap, developmental evaluation (DE) foregrounds and supports project practitioner learning and innovation under dynamic, complex, and uncertain operating conditions. Applying the DE focus on project actor learning and innovation, the present research thematically analyses how practitioners in a funded CBS case study project make sense of their practice. Despite its explicit focus on learning however, DE has not articulated a coherent cognitive paradigm, and a contribution of the present study is to equip DE with a conceptual architecture drawn from the enactive cognitive science paradigm, rooted in an explicit accounting of complexity. Using this base, a prototype DE framework was designed and provisionally field-tested in the form of a set of prompts to be used with CBS practitioners to augment traditional monitoring and evaluation activities. This framework is intended to support practitioners in surfacing and capturing second-order learning about their practices and to explore opportunities for innovative responses to dynamic complex operational conditions. Recommendations are offered for further research and how these findings might be incorporated into future CBS design and funding considerations.



Thesis Flow Diagram

1. INTRODUCTION:

The challenges of community sustainability pose what has been referred to as a 'wicked problem' (Rittel and Webber, 1973), understood as one posing a set of challenges that have no definitive formulation, that tend not to resolve in a true or false outcome and which have no specific stopping point. While this thesis uses the challenges of sustainability as an example of a wicked problem, the thesis is not in itself a study of sustainability, nor an evaluation of the relative impacts and outcomes of a given suite of interventions. Rather, sustainability is the complex and wicked problem context to which community-based sustainability (CBS) projects are deployed as a method of intervention.

It will be argued in the present research that for such projects to maintain relevance as an intervention, project actors are to adapt developmentally to the constraints and opportunities of their domains of operation. This process of reflexive developmental adaptation is here referred to as second-order learning, that is, the capacity to learn how to learn. This capacity is largely overlooked in traditional monitoring and evaluation (M&E) practice, leading to a series of debates about the nature of indicators used to measure changes towards sustainability, the capacity of project actors to engage with M&E techniques and methods, and whether the linear design of projects is fit for the complex purposes to which they are deployed.

This chapter introduces the research activity in broad terms and highlights some of the key arguments developed in the body of the thesis. The chapter begins by mapping out the context in which this research is located, first, by acknowledging the increased significance attributed to evidencing the impacts effectuated by community-based sustainability projects in UK policy

frameworks on mitigating greenhouse gas emissions and contributing to the shift in social and economic adaptations and sustainability.

Second, the nature of the endeavour to evidence impacts of this sort are critically considered. This includes the contested nature of sustainability as a construct and the variability and attributed appropriateness in the dimensions any agreed upon metrics must reflect change in. Moreover, the pragmatic constraints facing many community-based sustainability projects must be accounted for. These include both expertise and skills, and the tractability of available monitoring and evaluation processes by front-line practitioners and participant actors.

The third aspect that contextualises the present research is the challenge brought about by the tension that arises from the use of monitoring and evaluation frameworks which are broadly aligned with a paradigm corresponding to so-called “normal science” (Funtowicz and Ravetz, 1993), characterised by reductionism, linear causality, and an objective reality that is acted on by neutral observers. In practice however, the domain within which practitioners operate involves both multiple perspectives as well as complex adaptive social-ecological systems, and is better described as corresponding to “post-normal” (Funtowicz and Ravetz, 1993) or complexity science.

Following this brief overview of the research context, the aim of the research, the research objectives and the anticipated contributions to the field are articulated. An overview of the structure of the thesis is then presented, in which some of the main points in each of the subsequent chapters are highlighted. The chapter concludes with a brief synopsis of this introduction.

1.1. Critical context of the present research:

In this section, the present research is located within a critical context comprised of a combination of, first, the mounting evidence of anthropogenic global warming and climate change together with the emergence of what has been termed the Anthropocene epoch; second, the increased pressure on community-based sustainability projects to act as levers in helping to deliver against decentred and devolved climate change mitigation legal commitments and strategies in the UK; and third, the challenges inherent to monitoring and evaluating changes associated with enhanced sustainability. As noted above, these all contribute to sustainability being an exemplar of a wicked problem.

1.1.1. Human-induced global impacts:

In the UK, as part of the policy framework response to the ever-mounting evidence of anthropogenic climate change, there is now ambitious legislation committing the government to an 80% reduction in greenhouse gas emissions over the 1990 baseline by 2050 (H.M. Government, 2008). The scale of ambition informing this policy commitment is overwhelming. Since the Industrial Revolution, and picking up pace following the end of the Second World War, humanity has presided over a dramatic increase in atmospheric greenhouse gases triggering climatic change and global warming (Hansen *et al.*, 2005). Such increases are associated with the release of vast quantities of primarily carbon dioxide (CO_2) which trigger positive or amplifying feedback loops resulting in melting permafrost yielding unknown volumes of methane (CH_4) (Hansen *et al.*, 2007; Intergovernmental Panel on Climate Change [IPCC], 2014), estimated to be some 30 times more potent than CO_2 as a thermal insulator. These changes are further exacerbated by melting polar ice caps and glaciers which diminish planetary albedo and thereby contribute to the black planet effect whereby the planet absorbs more heat than it reflects. The pace at which these changes are accelerating suggests that even previous assessments associated with the widely accepted limits of “2 °C now represents

the threshold of extremely dangerous climate change", a limit that society may have "little to no chance of maintaining" (Anderson and Bows, 2011: 41).

In addition to clear existential risks from climate change, evidence is mounting of a perfect storm of converging threats which has been designated the Anthropocene epoch (the age of the human) (Crutzen and Stoermer, 2000; Zalasiewicz *et al.*, 2010; Verburg *et al.*, 2015), although its precise point of origin is currently under debate. Stratigraphers suggest as candidates the dawn of agriculture when humans first sought to control and bend nature to our own ends (Lyons *et al.*, 2015), or the Industrial Revolution and the magnification in scale of human power afforded by burning fossil fuels (Waters *et al.*, 2016), or the detonation of the first atomic devices in April 1945 during the Trinity nuclear tests (Waters *et al.*, 2015). The significance of the new epoch however is that it signals the end of the Holocene, a period of some 11,500 years characterised by moderate and stable temperature ranges conducive to human development and flourishing. In contrast, the newly emerging epoch is characterised by profound uncertainty and risk for the future of human civilisation.

Evidence for the Anthropocene includes climate change, the human precipitation of a sixth biological mass extinction event (Novacek and Cleland, 2001; Ceballos *et al.*, 2015), transgressing planetary processes beyond a safe operating space (Röckstrom *et al.*, 2009), and significant changes to land cover biomes (Haberl *et al.*, 2007; Fischer-Kowalski, Krausmann and Pallua, 2014) and hydrological systems (Nilsson *et al.*, 2005). Estimates are that intensive agriculture has reduced arable soil to the extent that there are approximately 60 years of harvests left in the available soil resources (Food and Agriculture Organization of the United Nations [FAO] and Intergovernmental Technical Panel on Soils [ITPS], 2015), while the regeneration of three centimetres of top soil is a process that takes up to 1,000 years. When these anthropogenic impacts are viewed collectively, some have been prompted to reconsider the utility of concepts such as sustainability in favour of a renewed

emphasis on adaptation and radical changes to economic infrastructures and our *modus vivendi* (Dumanoski, 2009; Craig and Benson, 2013; Benson and Craig, 2014; Foster, 2015), while others have begun contemplating the likelihood of an end to civilisation as we know it (Kingsnorth and Hine, 2009; Diamond, 2011; Scranton, 2015). Clearly, threats to human sustainability exemplify, *par excellence*, a wicked problem.

1.1.2. Devolved delivery of sustainability:

Against these alarming and apocalyptic trends, the UK government introduced a national community energy strategy, in which are outlined the scope of the anticipated contribution community-based sustainability (CBS) projects can make to helping the government attain its 80% reductions, as per the Climate Change Act 2008. Building on the devolution of powers enshrined in the UK Localism Act (H.M. Government, 2011), the national community energy strategy calls upon CBS projects to contribute to a rigorous and robust "evidence base", in order to demonstrate "their effectiveness, financial sustainability and wider social benefits to secure investment" (Department of Energy and Climate Change [DECC], 2014: 45).

It is apparent that the practices of CBS projects are perceived by policy makers to have consequences extending beyond the project's own performance monitoring and evaluation (M&E). One aspect of these anticipated consequences is, as per the Localism Act 2011, that such CBS projects might contribute to the establishment and control of localised community-scale sources of energy supply and demand management (Bradley, 2014; Aiken, 2015).

As the policy and performance pressures on CBS practitioners mount, it is apparent that funded CBS projects are coming under increasing scrutiny to not only deliver on community sustainability outcomes, but to be able to evidence the extent of this delivery. In turn, this ups the ante for CBS

practitioners to ensure that their M&E practices are appropriately framed in order to make a strong case for demonstrating the added value such projects bring to local, regional, and national climate change mitigation and adaptation strategies. As arms-length delivery vehicles for the UK national energy strategy to help realise the ambitions enshrined in the Climate Change Act 2008, CBS projects have become – at least to some extent – accountable to national UK policy frameworks, even if such commitment is mitigated via the channels of donor funding organisations.

There is no standard CBS initiative model. Instead, this descriptor refers to a heterogeneous group of actors who have in common the intent to "serve the environmental and social sustainability needs and interests of (mostly) place-based communities [and] may operate for profit or not" (TESS, 2016: 1). Because there is no standardised model, initiatives range from a full complement of paid staff to volunteer-only projects, some being formally constituted as charities, while others are more 'organic' and emerge from local interest to undertake a specific activity (e.g., a local garden scheme). While the CBS initiative as a class of community activities may have its roots in the environmental pressure groups emerging in the late 1960s and 1970s, examples of CBS initiatives include, but are not limited to, the transition town network and smaller neighbourhood interest groups, donor funded and formal projects such as the Good Life Initiative (funded by Joseph Rowntree) or the Communities Living Sustainably (CLS) cluster of projects (funded by Big Lottery). The focus of the current research is on the latter type of project – those that are formally constituted, funded, staffed, and accountable to external bodies for the performance relative to agreed outcomes. The outcomes to which such projects work are generally supported by monitoring and evaluation frameworks, of varying sophistication, and are also broadly aligned with key policy concerns, such as fuel poverty in the case of the CLS projects.

This shift in the government's emphasis on local not-for-profit CBS (community-based sustainability) projects as quasi delivery vehicles for the UK national energy commitments is not without problems. One of the sources of these problems concerns the M&E practices of CBS projects. As observed almost a decade ago, there "is a lack of definitive evidence on the impact, costs and benefits of community initiatives designed to secure individual behaviour change [with respect to] 'low carbon lifestyles'" (Letcher, Roberts and Redgrove, 2007: 4).

While it is difficult to ascertain the degree to which such concerns about the lack of impacts still hold almost ten years after this meta-review was published, it is clear that CBS projects have a considerable range and diversity in how they are organised, their objectives and ambitions, their achievements, and even the length of time for which they have been active (Seyfang, Park and Smith, 2013).

What this means is that the impact and effective contribution of such projects warrants on-going evaluation (Hamilton, 2013; Seyfang *et al.*, 2014), especially as, according to DECC, there are in excess of 500 such community-based projects in the UK at present (DECC, 2014) with nearly 500 chapters of the transition town model across the world who have 'signed up' to the transition initiative protocol.[1] It may be anticipated then that the quality of M&E practices across this heterogeneous sector will be highly variable.

1.1.3. Monitoring and evaluating sustainability performance:

Due to ethical and practical considerations involving manipulating communities and withholding interventions to establish control group conditions, "community initiatives have proven difficult to evaluate because they do not lend themselves to traditional experimental methods" (Milligan et al., 1998: 45). But,

1 https://transitionnetwork.org/initiatives/by-number Accessed March 11, 2016.

even though such projects are not amenable to the gold research standards of experimental design, community initiatives also pose their own problems for evaluation even when taken on their own terms. These challenges extend across the gamut of the three evaluation types identified in the UK Government's 'Magenta Book' (HM Treasury, 2011) – process (how was the endeavour delivered), impact (what difference did the endeavour make), and economic (do any benefits accrued from the endeavour justify the costs) – albeit in different ways depending on the focus of the evaluation efforts. The present study restricts its focus to process and impact evaluations only, and these certainly appear to be the more prevalent approaches used in the evaluation of community sustainability and development project efforts. Economic evaluation tends to be of the form of *post hoc* value for money summative reviews.

As Letcher, et al., observe in their 2007 meta-review of community-based energy initiatives, "[e]valuation of the impact of community initiatives on individual behaviour is generally low quality and terms such as 'behavioural change' and 'behavioural measures' were not meaningful to community groups" (Letcher, Roberts and Redgrove, 2007: 5). This is by no means a recent problem however. It seems that since the late 1980s as this type of community-based initiative became more prevalent, such projects have "been struggling to find evaluation strategies and methodologies that correspond well to the goals and designs of the initiatives themselves" (Connell and Kubisch, 1998: 15).

Research into the effectiveness of community-based campaigns and initiatives to address climate change and the anthropogenic causes of greenhouse gas emissions do not return particularly favourable results (Kern and Smith, 2008; Stephenson *et al.*, 2010). In a controversial critique of the impact of the American environmental movement, for example, it was noted that, considering "the long string of global warming defeats [in America], it is hard not to conclude that the environmental movement's approach to problems and policies hasn't worked particularly well" (Shellenberger and Nordhaus,

2004: 7). This failure is substantiated by reports that climate change continues, with CO_2 levels now higher than at any point during the previous 23 million years (Hamilton, 2016).

Even as we know more about the reality of climate change, it seems that our concern about climate change declines (Shi *et al.*, 2016). This might be due, in part, to a positive linear correlation between the prevalence of mortality salience prompts (i.e., reminders of one's pending death) and an increase in those behaviours that are associated with high levels of consumption, denials of connectivity with non-human life, and swings towards increased religiosity and a right wing political mind-set (Rosenblatt *et al.*, 1989; Greenberg *et al.*, 1990; Goldenberg *et al.*, 2001), typical of conservatism and intransigence to change and uncertainty. All of these shifts in attitude and values are, in turn, correlated with increased levels of greenhouse gas emissions and a decline in concern about anthropogenic global warming (Dryzek, 2013).

This does not discount the potential that CBS initiatives might nevertheless play in helping to ameliorate greenhouse gas emissions and the impacts arising from these at a community-scale. But what this does suggest is that the matter is far more complex than many community-based projects seem to be equipped to deal with, even though expectations that such projects demonstrate their efficacy are on the rise. Indeed, "the emphasis placed on evidence within wider knowledge, research, and learning systems of NGOs has changed from negligible prominence to a more central notion within NGO discourse, policy, and practice" (Hayman, 2016: 129). What counts as evidence of impact varies significantly because the range of initiatives lack clearly specified definitions that are widely shared (Gooding, 2016).

However, if appropriately designed, CBS "M&E can have an overtly strategic function […] using certain representations of impact to gain entry into spheres of influence that may enable groups' ethos and aims to gain further

public traction with the public or other stakeholders" (Hobson, Mayne and Hamilton, 2016: 14). The issue is, of course, what constitutes such '*representations of impact*', when faced with a clear and pressing incentive to "estimate these initiatives' effects on interim and longer-term outcomes and the need for *information on how the interventions produce those outcomes*" (Connell and Kubisch, 1998: 15. Added emphases). To gain the traction into the spheres of influence imagined by Hobson, et al., (2016), capturing project actor learning must therefore become a priority.

1.1.4. Evidencing impacts: The current status of CBS M&E research:

There is little available research into how community-based sustainability (CBS) projects use monitoring and evaluation (M&E) in their practice, and the recognition of this gap prompted the EVALOC[2] initiative, a three year UK-based research project. It was designed to understand how community-based low carbon groups might best identify, evidence, and communicate their impacts and contributions to mitigating greenhouse gas emissions and facilitating community adaptations to climate change. One of the main conclusions from the EVALOC research using focus groups, interviews, and surveys with representatives from twenty UK-wide CBS initiatives was that, by and large, there is "a definite shortfall in groups' current abilities to capture lessons learnt from project and activities, in part not only due to skills and 'know how', but also due to a lack of time and direct incentive to do so" (Hobson, Mayne and Hamilton, 2016: 9). In short, what practitioners are learning is not being fed forward into future project design, in large part because it is not being captured.

However, there may be other reasons for the paucity in quality of M&E evidence in CBS projects. For example, from the perspective of CBS practitioners, the "[m]onitoring and evaluation of targets is often seen as a box-

2 EVAluation of LOw Carbon communities (EVALOC) http://www.evaloc.org.uk Accessed September 2, 2015.

ticking exercise, or an onerous activity that communities do not have the resources to undertake" (Merritt and Stubbs, 2012: 101). A similar conclusion was reached by the EVALOC research as well (Hobson, Hamilton and Mayne, 2014; Hobson, Mayne and Hamilton, 2016), and from the context of the present research findings, M&E is often considered to be 'just data entry' with very low priority among practitioners relative to other commitments.

The challenges confronting CBS practitioners in undertaking M&E also extend beyond issues of time and resource constraints and skills-based capacities. A significant barrier facing CBS practitioners in evidencing the impacts of their efforts is also due to the nature of what they are attempting to evidence. Natural-science oriented research into sustainability attempts to find an apolitical empirical basis with which to establish what constitutes sustainability, and any changes in the domain of interest are established in relation to those metrics. This has been particularly critical for establishing climate change and other Anthropocene impacts. However, it cannot account for the social value basis that underpins what is deemed important to sustain, and therefore conditions what is sustained (Blühdorn, 2007, 2011). That is, the challenge to develop sustainability indicators (SIs) that are "globally comprehensible, [but] locally derived" is a "highly politicised process" (Elgert and Krueger, 2012: 565), fraught with competing value systems and multiple perspectives.

1.1.5. M&E and a tension of paradigms:

While the contentious and politicised nature of designing and developing SIs is a theme to which this discussion will return in the next chapter, it is also important to not lose sight of the paradigm within which they exist as meaningful markers of change. One of the assumptions that underpins the current thesis is that SIs, and the epistemological claims that afford merit to the idea of 'globally comprehensible' metrics, are predicated on what may succinctly be dubbed a "normal scientific" paradigm (Funtowicz and Ravetz, 1993). This paradigm is

characterised by causal relations among components that correspond to the three Newtonian laws of motion, and which presuppose a neutral or objective observer who describes a series of events from what is assumed to be a value-free vantage point, as if a view from nowhere or a God's eye perspective (Maturana, 1988b). However, this paradigm is difficult to substantiate outside of the controlled and delimited constraints of the laboratory, and even then the observational bias of the experimenter as an influence on what is observed and reported on cannot be discounted (Bohm, 1987; Espinosa, Harnden and Walker, 2008; Williams, 2008).

In other words, formally constituted and funded CBS practitioners are in a position of applying “normal scientific” methods to monitor and evaluate activities in what is better accounted for through a complexity paradigm (Chambers, 2014). This claim is substantiated further when it is recognised that mode-2 (Gibbons *et al.*, 1994; Nowotny, Scott and Gibbons, 2001; Hessels and van Lente, 2008) interventions comprehend problems of community sustainability to reflect multiple perspectives and vested interests, and as a result are inherently complex requiring cross-sector collaborations (Regeer *et al.*, 2009). In contrast, mode-1 knowledge production tends to be academic and constrained to discipline-specific forms of investigator led research. Mode-2 interventions are therefore predicated on an emergent design protocol that invoke experimentation and engage participating actors in double loop learning processes, in which it is anticipated that interventions will have an impact at larger scales of the system as well as on individual actors or beneficiaries. Double loop learning is one of three modes, or loops. Single loop learning may be understood as characterised by reconsidering decisions made in light of new information, while double loop learning involves the re-evaluation of the assumptions themselves that informed a given decision. These two loops were popularised in management science by Argyris and Schön (Argyris and Schön, 1978), who based their work on Bateson’s (1972) studies on recursion. A third (or triple) ‘loop’ is deutero-learning, which refers to the recursive practice of

learning about the process of learning itself (Bateson, 1972, 1979), that is second-order learning.

Monitoring impacts within complex systems is, itself, a complex matter, and linear accounts of causality give way to narratives of emergence, reflexivity, and cross-scalar influences (Cilliers *et al.*, 2013; Byrne and Callaghan, 2014; Wise *et al.*, 2014). However, standardised evaluation strategies are ill-equipped to tackle the complexities of community sustainability which may be characterised by mode-2 properties, including "a plurality of values and perspectives, permanent uncertainties, and pervasive interconnectedness between ecological, social, institutional, political, and economical system[s]" (Regeer et al., 2009: 521) which suggest that attempts to identify and link interventions and impacts in terms of a model of linear causality are inadequate, and rely on arbitrary distinctions on the part of the observer (Kaufmann, 2011; Nielsen, 2016).

As will be discussed in Chapter 2, evaluation involves making sense of data and exercising judgement as to the degree of alignment between how the problem is defined, and the outcomes by which the impacts on this are known.

1.2. Focus of the present research:

As noted at the outset of this chapter, while the preceding discussion has concerned sustainability, it has done so in order to flesh out the nature of one of the most pressing exemplars of a wicked problem in modern times. However, the focus of the present research is *not* about sustainability per se, *nor* about effective interventions as such. Instead, it is an exploration of how actors in an intervention project learn to learn to be relevant given the operational conditions characterised by the wicked and complex problem of sustainability.

As outlined briefly in the preceding paragraphs, monitoring and evaluating impacts attributable to CBS projects is far from straight forward. Evaluating how sustainability initiatives are delivered (that is, “process evaluation”) raises a higher degree of complexity than does impact evaluation because unlike the latter, process evaluations will be determined by the focus of the initiative and not by any “simple, generic characterisation of questions such as those that tend to be applicable […] for impact evaluation” (HM Treasury, 2011: 18). Moreover, in much of the available research on evaluating community-based sustainability (CBS) initiatives, there is a tendency to blur the distinctions between the focus of the evaluation in terms of whether it is a process or an impact evaluation.

As a result, the expectation of CBS initiatives to provide a robust and rigorous evidence base of their activities with respect to effectuating changes in the energy-related behaviour of communities, as per the expectations of the national energy strategy (DECC, 2014) to help deliver against the UK Climate Change Act, is not something to which CBS initiatives can readily respond. On one hand, the delivery – i.e., process – of the initiative may well be congruent with the original intent of the project while the actual impacts continue to be minimal. The matter is further complicated by the CBS projects' experiences and feelings about M&E processes and the utility of the frameworks, the level of expertise and the resource capacity of CBS practitioners to engage in rigorous M&E practices (Hobson, Hamilton and Mayne, 2014; Gupta *et al.*, 2015; Hobson, Mayne and Hamilton, 2016).

The EVAluation of LOw Carbon communities (EVALOC) research only tapped into a small percentage (~4%) of DECC's estimated 500 CBS initiatives and did not claim to represent the sector. However, when this research and other reviews of CBS initiatives (Hume and Hume, 2008; Elgert and Krueger, 2012) are read alongside available research from international development agency M&E work (Powell, 2006; Ravallion, 2008; Ramalingam, 2013;

Chambers, 2014; Burns and Worsley, 2015), the emerging pattern is quite similar. Even though this sector may be argued to be populated with "knowledge-intensive organizations" (Lettieri, Borga and Savoldelli, 2004: 17), on the whole, it also tends to be deficient in the formal processes of capturing, sharing, and diffusing knowledge (Hume and Hume, 2008).

Aside from these broad conclusions based on multiple CBS project reviews and meta-reviews of the available literature, very little detailed and in-depth research has been undertaken to date with CBS projects to explore how M&E is used, from the conception of the project with the (typically) inherited outcomes developed by others during the funding application phase, the process of renegotiating and interpreting appropriately focused and scaled outcomes, through to the implementation of the M&E framework *in situ*. Most research that follows a case study review of a CBS project tends to focus on how the project engaged with members of the host community, the deployment of particular interventions and activities and report on their relative efficacy and the strategic decisions made by the project leads (e.g., Cinderby et al., 2014). In other words, these tend to be process evaluations. Nevertheless, these case studies are critical in contributing to the accumulation of both academic and practitioner understanding of deploying CBS projects.

In addition to such studies, what seems also to be necessary is to concentrate research efforts on how front-line CBS practitioners make sense of the complexities of the arena within which they operate. Such focus is given recent impetus courtesy of the importance attributed to CBS projects in helping to deliver on national energy and climate change policies. This means that project evaluation is to straddle the division between processes and impacts, in recognition that while the distinction may hold value for evaluators, espoused in such guides as the UK Treasury's Magenta Book, for example, from the perspective of practitioners, a project that delivers according to the project design and intention is expected to affect the anticipated outcomes (i.e.,

impacts) in keeping with the project's theory of change. That is, the delivery of the project is the expression, the enactment, of the project's theory of change. If it fails to deliver the anticipated impacts, and assuming that the delivery (process) is sound, then any lack of impacts concerns the validity of the theory itself.

In many cases, practitioners are not responsible for designing the project, but are hired *post hoc* to deliver on a set of outcomes already agreed to and funded. Certainly this is the instance in the twelve Communities Living Sustainably projects funded by BIG Lottery, one of which is the extended case study project explored in this research. Practitioners are therefore constrained by the set of outcomes to which the funding proposal has committed itself and seek to deliver as best they can against those outcomes in a way that is consistent with their operating theory of change.

Consequently, this research shifts away from a focus on the Magenta Book type distinction between what is a process or an impact evaluation and instead seeks to explore a more cross-cutting cognitive, or sense-making, terrain with practitioners. This research takes as its starting point the phenomenological perspective of front-line CBS practitioners who, upon agreeing to act as practitioners, find themselves confronted with and attempting to reconcile a set of agreed outcomes for which they are held accountable for delivering against.

This is to be achieved by using a more or less (explicitly or tacitly) articulated theory of change that draws on knowledge claims about causality and how change is induced, elicited, and brought about within the constraints of complex and dynamic social, ecological, and economic systems. These systems are, in turn, realised through the expression of multiple perspectives, each with vested interests that may or may not coincide with the objectives of the project. This is consistent with what Patton terms a 'developmental

approach' to evaluation (Patton, 1996, 2011), which is commensurate with the complex contexts within which CBS initiatives operate.

Using terminology introduced in the next chapter, traditional approaches to evaluation broadly make judgements about how the evaluand has performed relative to the outcomes of the project. What is seldom taken into account however are any differences between how practitioners frame the causes (diagnostic framing) and how funders and designers frame the solutions to the problem that motivates the project's initiation. Both perspectives involve making sense of complex data, drawing on significant assumptions about how the world is thought to work. What is often overlooked as significant in traditional evaluations is the learning that practitioners acquire through the process of reconciling the outcomes framework with the operational constraints of delivery.

Specifically, the present research seeks to explore and explicate how front-line CBS practitioners conceptualise change, measure its scale and plot its direction of travel, correlate interventions and effects, evaluate impacts, and draw on their accumulating wealth of knowledge to foster and diffuse learning within their own project. The research reported in this thesis intends to make a contribution to this increasingly important domain of knowledge which has been hitherto under-researched and concerns how practitioners themselves evaluate and implement their learning in the course of delivering on the CBS initiative they are responsible for.

Put differently, this study privileges the philosophy of Michael Patton's Utilisation-Focused Evaluation[3] (UFE) approach (Patton, 1997; Stufflebeam and Shinkfield, 2007) by considering how practitioners themselves construe and deploy evaluative techniques and how they then utilise any findings of such evaluations contemporaneously to the on-going process of delivery. In other

3 UFE is concerned, as a methodology, with designing evaluations that are useful and relevant for decision making by priority users and stakeholders to obtain and apply the findings to improve project outcomes (Patton, 1997).

words, the focus of this study inquires after how CBS practitioners utilise the findings of on-going evaluations through reflexive practice (that is, a developmental evaluation), and uses data acquired via extended participant observation of the CBS case introduced in Chapter 4.

1.3. Research aim and objectives:

It is apparent from the foregoing overview of the literature that the processes through which community-based sustainability (CBS) and international developmental aid projects become better adapted to the complexities of their operational contexts remains under-researched. That is, there is a lack of understanding about how projects evolve to fit the domains in which they are deployed as interventions. Such adaptation involves deutero-learning processes, characterised by projects learning how to learn. In an effort to better equip CBS (and international developmental aid) projects to respond to the multiple challenges and complexities they face, exploring how projects become adaptive learning systems is anticipated to contribute to more effective project design and M&E practices.

As observed previously, the challenges of community sustainability are one of the most pressing and critical examples of that class of problems described as 'wicked' (Rittel and Webber, 1973). Against the backdrop of such a complex, multi-faceted, and multi-scalar problem, the focus of the present research is on how a project, such as one designed to elicit community sustainability, learns to respond to and operate meaningfully within the context to which it is deployed. Consequently, the aim of this research is to explore:

How a community-based project becomes a second-order learning system through continuous developmental adaptation to the constraints of its operational domain to maintain its relevance as an intervention.

This aim is supported by a number of research objectives, elaborated below:

(1) To explore how CBS actors understand their roles as facilitators of change.

(2) To explore how CBS actors generate learning from M&E to inform practice.

(3) To undertake an extended single case study of a CBS project as a participant observer, along with an elaboration of the project's context of operation.

(4) To explore the applicability of enactive cognitive science as a heuristic in the facilitation of project actor learning through developmental evaluation.

(5) To generate a developmental evaluation framework.

In order to accomplish these objectives, the adopted research method, elaborated in Chapter 3, is briefly as follows:

(1) With their consent, actors' conversations will be audio recorded during the participant-observation of meetings and the facilitation of action research sessions in the context of an extended single case study CBS project, to which I have extensive access.

(2) The transcribed recordings of meetings, semi-structured and focus group interviews, and supplemented by project documentation, will be thematically analysed.

(3) Key themes associated with the case study CBS project's developmental learning and adaptation will be identified.

(4) A prototype framework will be produced to facilitate the developmental evaluation of a project in support of innovation and reflexive adaptation.

1.4. Structure of the thesis:

The discussion in section 1.1., above, gave an overview to a number of the challenges that community-based sustainability (CBS) projects and international development aid initiatives share in common. Broadly, these concern monitoring and evaluation (M&E) frameworks that do not reflect the activities of project workers, for a range of reasons including capacity and skills and difficulties accessing the data required. But M&E frameworks may also not be set up to capture data that is appropriate to the actual impacts taking place on the ground, and this raises questions about the validity of the indicators used to populate such frameworks. The third challenge may be due to the way projects are designed in the first place, predicated on a linear and reductionistic paradigm that is unable to adequately design for the complexity of the contexts to which projects are intended. Using language to be introduced in the next chapter, project design may reflect a misalignment between the diagnostic framing of the problem and the prognostic framing of the solution.

In **Chapter 2**, key literature will be reviewed that explores these challenges in greater detail and sets the stage for what has been identified as the research gap that motivates the present research: how CBS projects can become learning systems that are self-adapting to the complexity of their operational contexts. It is hypothesised that when projects become better adapted they will become more effective as interventions because they will respond iteratively in terms of aligning the prognostic framing with the determination of the problem, which may also require on-going reflective evaluation. In short, project actors learn how to learn.

Following on from the literature review, **Chapter 3** introduces the methodology by which the present research is undertaken. Briefly, the methodology followed uses an ethnographic participant-observation data collection method in combination with a single extended case study of a grant-funded, five year CBS initiative located in a market town in south Leicestershire, England. The case study method is particularly appropriate because I have extensive access to the CBS project and given the research aim and questions, the case study approach permits a detailed exploration of how a complex phenomenon of interest operates within its natural context (Flyvbjerg, 2001; Yin, 2009; Thomas and Myers, 2015).

When coupled with an ethnographic participant-observation approach (Spradley, 1979, 1980; Geertz, 1983; Goodman, 2003), in which the local meanings and accounts of the case practitioners are privileged, the data generated are thick and rich narratives of how CBS front-line actors navigate and enact the niche within which the project operates. The integrity of these narrative accounts are preserved through extensive audio recordings of meetings, semi-structured interviews, a focus group, and a number of action research (Greenwood and Levin, 1998) sessions, which were subsequently transcribed by the researcher to maintain the chain of data custody.

The analytic methods adopted for the purposes of this research are informed by a constructivist interpretive paradigm, in keeping with the two primary sets of literature reviewed. The primary qualitative method used is Thematic Analysis (Braun and Clarke, 2006; Bryman, 2012) to generate emergent themes. This method is briefly discussed in Chapter 3, but is applied in two phases, the first involves the generation and application of codes, which is the focus of Chapter 7. The second phase involves the drawing together of themes from the codes, and this is the focus of Chapter 8.

Chapter 4 concerns the context of the study, and develops two points of focus. The first introduces Sustainable Harborough, the case study community-based sustainability (CBS) project, as per the third research objective. The developmental history of the project is traced from its origins as an idea by the Market Harborough chapter of the Transition Town network submitted to BIG Lottery, the philanthropic arm of the UK National Lottery corporation, through to the politically contentious process of bid development and the selection of outcomes and indicators which the project subsequently inherited, culminating in the official launch of Sustainable Harborough. The project is described through reference to its M&E framework and its vision statement.

The second focal point of Chapter 4 introduces and discusses the social and physical contexts for the case study project. This begins with a brief historical overview of how Market Harborough came into being, and how with its emphasis as a mid-point between the medieval towns of Leicester and Northampton, it became a popular place for both trade and overnight accommodation for travellers. The local ecology is briefly considered, and then some key data from publicly available ONS and DECC sources are summarised in order to give a profile of the population, the housing and households that comprise the town. This statistical data is supplemented by findings from three commissioned consultations from the 2012 Communities Living Sustainably Survey, through the Community-Led Planning survey, to the most recent State of the Town report. These data are offered to give a richer description of the operational context of the case study project than would otherwise be available.

Chapter 5 discusses the analysis and initial findings of the data collected as described in the Methodology (Chapter 3). This chapter covers three main areas: a review of the data collection process and analytic treatment thereof; a summation and overview of the case study's activities and developmental milestones; and finally, an exploration of how the project team experienced and responded to the M&E framework.

Using a coding dictionary developed with reference to the literature on sense-making and framing in Chapter 2, this chapter also highlights the relative constraints of these concepts in terms of surfacing the reflexive processes engaged by project actors in becoming a second-order learning system within a complex operational context.

Chapter 6 involves a detour in order to introduce a second critical body of literature to help this research grapple with the complexities of the operational domains into which community-based sustainability (CBS) and international developmental aid initiatives are deployed. This chapter advances the case that traditional models of cognitive science, the so-called Computational Theory of Mind (CTM), are ill-equipped to account for the paradigms of post-normal and complexity science.

As outlined in the present chapter, and considered further in the next, if the design of CBS initiatives is predicated on a linear and reductionistic paradigm, then the degree to which such initiatives are able to reflexively engage and influence these complex domains is already constrained. As a consequence, by asking how a learning system, like the putative Sustainable Harborough project, learns to do what it is purported to do – that is, learn how to do community sustainability – a theory of cognition that allows for reflexivity and higher orders of complexity is necessary. The CTM, with its emphasis on symbolic representationalism and tubular communication models, is unable to do so.

To address this lacuna, the enactive cognitive approach is introduced and discussed, and as this is the first time that this approach has been applied to the domain of community-based sustainability and evaluation, and because it does signal a radical break from the more familiar CTM, Chapter 6 is dedicated to explicating the theory and to considering some of its many implications for CBS, project design, and practice.

Chapter 7 considers the findings presented in Chapter 5, but does so from the body of literature on autopoietic and enactive cognitive theory introduced in the previous chapter. This literature informs the development of code categories and codes which are applied to the transcribed audio recordings of the meetings to which I was party. Each of the codes reflects an application of this new theoretical framework to explore and track evidence about how the case study CBS initiative, Sustainable Harborough, might become a system of learning about what works to elicit change in the direction of sustainability outcomes. As noted above, Chapter 7 is the first of a two phase application of Thematic Analysis, and contains a number of illustrative examples of how the code dictionary (see Appendix H) is used.

Chapter 8 is the second phase of the Thematic Analysis, and draws together the evidence from the code categories to explore how the emergent narratives connect to address the research questions and advance towards satisfying the motivating research aim of this study. In this chapter, the main themes concerning how the case study project might become a system of learning are explored as the basis for a developmental evaluation framework for potential deployment with CBS and developmental aid initiatives as part of the evaluation repertoire. The focus of a developmental evaluation is on how the initiative is undertaking and responding to the challenges of becoming a (second-order) learning system which, it is theorised, facilitates the initiative's acquisition of the necessary variety or complexity requisite to the complexity of its operational context (Ashby, 1957). A prototype developmental evaluation framework will be produced and discussed in reference to the research process, as per research objective five, above.

Chapter 9 draws the thesis to a conclusion, reflects on the research endeavour as a whole, and identifies shortcomings and some recommendations for future research. These include recommendations for both project and M&E framework design. References and Appendices round this thesis off.

1.5. Chapter synopsis:

The research concerns how community-based project actors learn to reflexively adapt to the dynamic complexities of their operational domains in order to maintain their relevance as an intervention relative to a given problem. By referring to one of the most pressing wicked problems of modern times, the challenge of sustainability, a case study community-based sustainability (CBS) project is examined for how the project actors understand their own roles as facilitators of change, and how monitoring and evaluation informs their practice. Consequently, this research is *not* about sustainability *nor* about evaluating the relative efficacy of practices *per se*, but rather is concerned with the processes through which the case study project actors learn how to learn in order to maintain the relevance of the project as a mode of intervention.

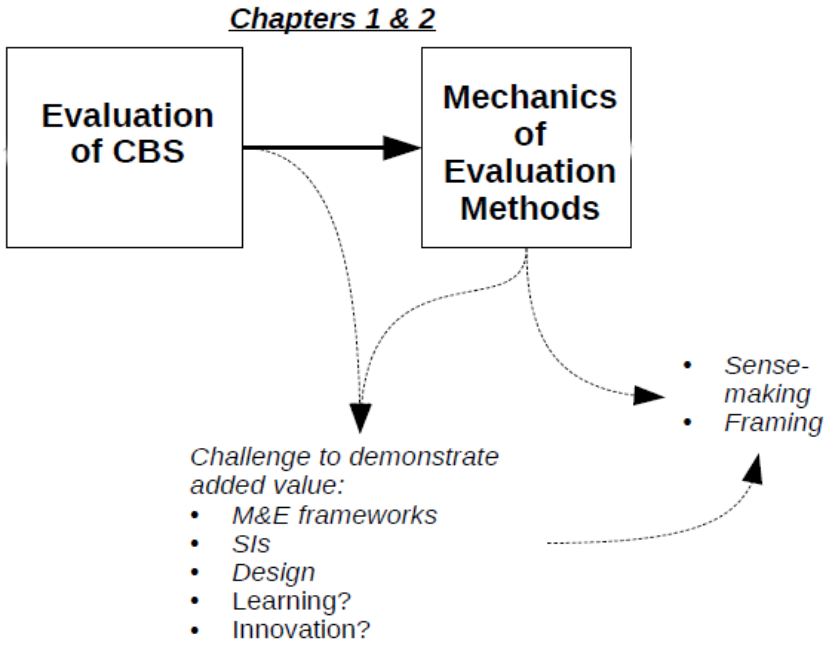
The research identifies how traditional methods of evaluation tend to be constitutively blind to the learning and innovation generated by community-based project actors. This blindness may be due to a methodological emphasis on the evaluation of impacts and outcomes. However, the learning and innovation arising from such projects is, in itself, a valuable contribution and also requires evaluation. Operating under conditions of complexity and uncertainty, community-based sustainability (CBS) and international developmental aid projects tend to be mostly prone to poor evaluation findings.

This chapter briefly reviews research exploring the tension emerging between, on the one hand, increasing scrutiny of and policy pressures on CBS projects to evidence their contribution to addressing climate change effects, and the variable impact evaluations such projects demonstrate on the other. Variable outcomes of such projects have been accounted for as due to, first, the interactions between project actors and the M&E frameworks in use; second, the M&E frameworks themselves as a result of the indicators used; and third,

the design of projects which are challenged by the complexity of the operational domains in which they are deployed.

In an effort to address this gap in understanding, the present research aims to explore how a case study CBS project might become a system of learning about what works to elicit change in the direction of sustainability outcomes in a market town in southern Leicestershire, England. Of particular interest for the current research is how the project actors understand their roles as facilitating change, and how they generate learning from M&E to inform their practice. The research is anticipated to contribute to the literature by exploring how the case study CBS project engages in the process of *learning how to learn*[4] in order to better fit the demands, opportunities, and constraints of the domain in which it operates to effectuate change associated with enhanced sustainability. As opposed to traditional formative and summative M&E approaches which are oriented towards accountability and performance, a developmental evaluation is better suited for the identification and capturing of practitioner learning *in situ* (Fagen *et al.*, 2011; Poth, Pinto and Howery, 2011; Rey, Tremblay and Brousselle, 2014; Hayes, Witkowski and Smith, 2016; Mcdonald, 2016; Dunkley and Franklin, 2017), and it is this emphasis that orients the present research. This research offers three contributions to the literature on community sustainability interventions. The first is that this study considers the potential for the case study initiative to become a learning organisation and exploring how this might be realised in order to better fit the complexities of its operational domain. The second contribution is the application of autopoietic and enactive cognitive theory to the study of CBS initiatives, which has, to the best of my knowledge, not yet been done. The third contribution is in the generation of a prototype developmental evaluation framework for use with CBS initiatives as part of a standard evaluation repertoire, but specifically to evaluate its acquisition of a capacity to learn and to engage reflexively with its operational context.

4 Previously this was referred to as “deutero-learning” following Bateson (1972, 1979).



Key:

Main Chapter Themes

Reflective Sub-Text

2. LITERATURE REVIEW:

2.1. Introduction:

The present research is directed towards addressing a gap in the literature as broadly introduced in the previous chapter. The concern is with the "dismal" (Ramalingam, 2013) and variable impact evaluations attributed to both community-based sustainability (CBS) and international developmental aid projects to demonstrate meaningful change where they have been deployed (Lawrence, 2007; Ika, 2012; Dunkley and Franklin, 2017; Ika and Donnelly, 2017). CBS and international developmental aid projects are often discussed in parallel in this research because it is apparent that they face many of the same challenges in terms of the complexity of the context within which they are deployed and the outcomes they are deployed to trigger, as well as the M&E framework assumptions by which they are held to account.

This chapter reviews some of the key literature on this topic, and critically engages with the debate on how such shortcomings in performance are accounted for. The chapter begins by reviewing the current thinking about CBS experiences with and uses of monitoring and evaluation (M&E) practice. Parallels are drawn between the M&E experiences of CBS practitioners and those reported by the international development aid sector, given the similarity of the challenges and constraints each group of practitioners face, as well as the complexity of their respective theatres of operation.

Further, although CBS initiatives are referred to generically, it should be clarified that such initiatives reflect a broad church of activities from grass-root volunteer led single-focus projects (e.g., a community garden), Earth First direct action activists, to formally constituted, fully funded staffed endeavours with management boards and relatively sophisticated M&E frameworks. When

referred to in the present work, unless specified to the contrary, *all* references to CBS initiatives refer to the latter class of endeavours: formally constituted, fully funded, staffed, with some body such as a steering or management committee, and a relatively sophisticated M&E framework identifying outcomes for the initiative and indicators against which performance relative to those outcomes is monitored.

Both CBS and development agencies are configured as knowledge-intensive organisational actors. The knowledge most commonly found in front-line projects is typically ‘tacit’ (Polanyi, 1983; Nonaka and Takeuchi, 1995), embodied in the workers as a result of their experience. This is not to discount the ‘explicit’ or codified knowledge collected in the vast reams of reports funded projects prepare and submit as part of their systems of accountability and evidence-base. However despite this array of tacit and explicit knowledge, there is an apparent deficiency in formal sharing, capture, or diffusion of knowledge (Hume and Hume, 2008). This compounds the general paucity among CBS and developmental aid projects to evidence impacts, maintain effective knowledge management practices, and make use of valid M&E frameworks.

There is an alternate view to the one given above that locates the fault with such projects. For example, Burns and Worsley (2015) propose that the problem may be less with the M&E frameworks as such, but due more to how the interventions are designed and planned according to a “normal science” (Funtowicz and Ravetz, 1993) or linear and reductionistic epistemological paradigm. The failure, according to Burns and Worsley, is a result of deploying a project designed according to this paradigm into a context that is more aptly described by a post-normal or complex scientific paradigm.

The proposition that poor outcomes are the result of a misalignment between the paradigms governing the design and subsequent deployment of a project lends itself to a broad response that places an emphasis on how the

practitioners and the participant actors themselves make sense of the complexity expressed through multiple perspectives and heterogeneous interests and values, non-linear causality, and emergent patterns of organisation. To provide a way of discussing this complex perspective, the sociological literature based on the work of ethnomethodologist Erving Goffman is adopted.

This literature foregrounds the concept of frames, and applies it to the interpretation of social behaviours. Taking a 'strip' – that is, a given sequence of social activity – Goffman proposed that this involved the semiotic of interpretative clues as to how the strip was to be 'read' (Goffman, 1974). Social movement scholars appropriated the term and applied it to understanding how actors who participate in mass mobilisations and social movements frame their activity in terms of their understanding of the issue(s) they are mobilising about, and the preferred solutions the actors hoped to achieve (Snow *et al.*, 1986; Snow and Benford, 1988; Benford and Snow, 2000). The twin concepts of diagnostic and prognostic frames provide a coherent bridge between the perceived short-falls of the evaluated performance of projects and the critique that such projects are ill-suited to the complex conditions to which they are deployed as interventions.

2.2. Evaluating the impacts of community-based sustainability projects:

Chapter 1 briefly reviewed some of the challenges and constraints encountered by front-line community-based sustainability (CBS) practitioners. This chapter critically re-engages that literature to draw out the key points in order to more acutely define the gap in research that motivates the present thesis.

Given the growing recognition among policy-makers of the potential role grassroots and community-based sustainability initiatives offer to help further governmental policies on climate change mitigation and adaptation, it is to be expected that such initiatives have attracted increased researcher attention. There have been a few large scale studies of such initiatives in recent years. For example, a special volume on case studies of sustainable urban transformation for the *Journal of Cleaner Production* tracked 35 cases and 130 surveyed examples of grassroot and community-based initiatives (McCormick *et al.*, 2013), while a survey of international Transition Town initiatives generated input from 276 respondents from over 23 countries (Feola and Nunes, 2013, 2014). In addition to these, there are a number of smaller-scale studies, such as the 15 case studies and content analysis of 113 case study reports by Hargreaves and colleagues (Hargreaves *et al.*, 2013), and the 12 community energy initiatives studied by Seyfang and colleagues (Seyfang *et al.*, 2014)., as well as several studies of five cases and fewer (e.g., Middlemiss, 2011; Forrest and Wiek, 2014).

Despite the variable scales, the range of methods, and the analytical frameworks the above studies have recruited, the over-riding impression is that there are few "powerful initiatives that are decisively shifting urban development in a sustainable, resilient and low-carbon direction" (McCormick et al., 2013: 4). While the papers that McCormick *et al*. (2013) bring together as part of the special issue concentrate on urban transitions, Feola and Nunes (2013, 2014) argue that the lack of meaningful results in urban settings may be due to a weak sense of place attachment. Consequently, evaluations of contributions to the climate change mitigation policy agenda offered by grassroot and community-based initiatives should draw from both urban and more rural settings.

Unfortunately however, even those studies that do not constrain the settings of the cases reviewed do not offer any greater confidence in the capacity for such initiatives to contribute meaningfully to the policy agenda.

Following their review of 12 grassroot community energy projects, for example, the overall consensus was doubt about the likelihood of whether “this emerging sector will ever coalesce into a robust niche” because it is “rather incoherent in terms of its direction, content and substance” and “neither robust nor influential” (Seyfang *et al*., 2014: 42). This echoes earlier research by Hargreaves, et al. (2013: 878) who concluded their review of 15 grassroot community energy initiatives by observing that such initiatives struggled even to survive let alone to “build a coherent, robust and strategic energy niche”, and therefore face “profound challenges”. Forrest and Weik (2015: 38) summarise the general consensus of research opinion in writing that “many interventions undertaken by initiatives would not be transformational” even if they were to be more effectively delivered, because any contributions such initiatives *do* make “are marginal compared to the magnitude of the task”. Finally, Middlemiss cites the limited and piecemeal evidence to support claims that community-based initiatives can “moderate some of the harmful environmental and social effects of the current consumerist culture” (Middlemiss, 2011: 265). Basically, conclude Middlemiss and Parrish (2010: 7566), given their lack of power and resources, the “inherently weak position of grassroots initiatives in promoting change” is evident.

In light of the disappointing reviews of their relative impact and contribution to the sustainability policy agenda, it is easy to perhaps dismiss these interventions as largely irrelevant. However, a closer examination of the reasons behind the variable outcomes of such initiatives yields usable insights. From the studies reviewed here, these restraints to successful outcomes seem to come down primarily to capacity matters.

The capacity of the context to support the initiative has been identified in several of these reviews and is also cited as a key factor in the effective public engagement for waste governance (Bull, Petts and Evans, 2010). This may be due, at least in part, to the importance of framing the ambitions of an initiative

within the central narratives of the community itself, specifically its self-image (Middlemiss and Parrish, 2010), but also refers to the necessity to apply generic lessons learned elsewhere to the specific local contexts (Seyfang *et al.*, 2014). Because the development of such initiatives is not a linear process, the values of some indicators for success may significantly change, and there may be a need for using different subjective and objective indicators (Feola and Nunes, 2014). In other words, learning is a constant and on-going process, and includes learning that what works in one place might not work elsewhere (Seyfang *et al*., 2014). This is due, in no small part, to the need for such initiatives to forge partnerships with the wider social world (Hargreaves *et al*., 2013).

Implicit to the above reviews however is a recognition of the unique challenges posed by sustainability objectives and which designates these as exemplifying wicked problems. This topic is explored further in the following section.

2.2.1. Paucity in evidencing impacts in community sustainability:

Climate change and tracking the impacts of the Anthropocene are based on robust empirical studies, using well established methodologies, transparent and peer-reviewed computer simulation models, and meticulous analysis of physiochemical media, all of which lends itself to mathematical abstraction. By contrast, policies intended to foster societal responses to the evidence of such impacts are based, for the most part, on case study narratives. These are qualitative measures, and consequently do not lend themselves readily to mathematical abstractions, are difficult to model, and are subject to multiple interpretations.

To illustrate this with a contemporary example. In 1899, Chamberlin, and later in 1903, Arrhenius both separately hypothesised that increasing

atmospheric carbon dioxide leads to a 'greenhouse effect' (Revelle and Suess, 1957). In the mid-1900s, the hypothesis was confirmed (Plass, 1956) while since then, there has been a steady increase in the volume of atmospheric carbon dioxide. In 1988, alarmed at what was already then being predicted as a cause of grave concern, James Hansen gave testimony to the US Senate committee (Hansen, 2009) and argued that, with 99 percent confidence, the Earth was being affected by greenhouse gas emissions, primarily carbon dioxide, and that a long term period of global warming was already underway.

Since Hansen's testimony, there have been numerous summits and international conferences, punctuated every few years by a series of increasingly dire reports from the UN International Panel on Climate Change (IPCC) about the scale of anthropogenic impacts already underway, based on mathematical computational scenario models of future impacts depending on how humanity addresses greenhouse gas emissions. Despite a series of well-evidenced warnings based on accumulating empirical evidence, along with the apparent concern of politicians, and multiple pledges to take serious action, the target threshold of 400 ppm of atmospheric CO_2 has recently been breached (Blunden and Arndt, 2016). The associated targets that aim to contain global temperatures to below 1.5 °C have already given way to renewed thresholds of 2 °C, and even this renewed limit is currently at risk of being breached (Hansen *et al.*, 2015; Blunden and Arndt, 2016; Mears and Wentz, 2016).

The point is that carbon dioxide levels have continued to escalate, despite the well documented and robust mathematical models based on a mature understanding of the physics of the chemical processes involved, and the incorporation of uncertainty margins. The challenge in addressing climate change does not apparently concern the hard quantifiable science. Instead, the fulcrum of change seems to reside within the 'softer', and qualitative, social dimensions. Consequently, the social science dimension of addressing climate change poses a more significant risk to adaptation. The 'hard' and quantifiable

science is already well established, while a more robust challenge resides in shifting human behaviour and attitudes. This is the crux of why sustainability poses a wicked problem.

Knowing the scientific facts underpinning climate change is, by itself, insufficient to leverage meaningful change in the social realm. It is widely accepted that cutting domestic carbon emissions is a key contribution to climate change mitigation. But the evidence remains inconclusive about how best to accomplish this. Behaviour change is notoriously difficult to accomplish, and the provision of information is not in itself sufficient to elicit changes at either a personal (Kollmuss and Agyeman, 2002) or a policy (Knight *et al.*, 2008) scale. The favoured approaches of information deficit reduction, behaviour change workshops, and community engagement seem to yield, at best, variable and short-lived benefits (Abrahamse *et al.*, 2005; Bamberg and Möser, 2007; Steg and Vlek, 2009), even when different incentives are used (Petersen *et al.*, 2007; Hoffman and High-Pippert, 2010; Bolderdijk *et al.*, 2012).

From their 2007 review of community initiative impacts on changing individual behaviours and engagement with respect to tackling climate change, researchers at the Centre for Sustainable Energy (CSE) found that there was, at that time, “a lack of definitive evidence on the impact, costs and benefits of community initiatives designed to secure individual behaviour change”, and more troubling, that the “[e]valuation of the impact of community initiatives on individual behaviour is generally low quality” (Letcher, Roberts and Redgrove, 2007: 4, 5). Such findings are supported by Lawrence in his review of environmental project impacts, in which he concludes that project impacts tend to be “highly variable” (Lawrence, 2007: 770).

The need for comparative research to evidence the relative efficacy of community-based sustainability (CBS) initiatives is becoming ever more pressing in light of the recent estimates of some 500 community-based low

carbon projects across the UK (Department of Energy and Climate Change [DECC], 2014) and a further ~500 community projects worldwide which align themselves with the Transition Town philosophy and approach. Each of these initiatives share in common, despite any other differences between them, at least the aim to “decrease collective resource consumption and/ or generate renewable energy” (Hobson, Hamilton and Mayne, 2014: 124). The difficult question to be broached is whether these community-based projects are equipped to grapple with the complex, multidimensional drivers of the Anthropocene and climate change.

The challenge is that these drivers are deeply interwoven with the cultural-economic fetish of growth and progress as indices of well-being and success (Hertwich, 2005; Seyfang, 2005; Blühdorn, 2007; Hamilton, 2010; Foster, 2015), multi-national corporations with vested interests in maintaining the status quo (Jacques, Dunlap and Freeman, 2008; Rees, 2010; Brulle, 2013), and a growing population in the global south who expect to enjoy resource-intensive lifestyles equitable with those in the north (Hertwich and Peters, 2009). Accounting for these drivers greatly exacerbates the complexity community-based sustainability (CBS) project actors must engage with; moreover, evidencing the impacts any local interventions might have on these cross-scale drivers also poses significant challenges.

Nevertheless, despite these systemic challenges, it is apparent that community-based approaches have a role to play in contributing to climate change mitigation, even if this is through attempts to intervene at the level of values and social factors that motivate members of the public. However, given the track record of similar endeavours, it is difficult to maintain optimism that efforts to do so will yield different outcomes at any point in the future. Moreover, policies promoting energy efficiency and renewable energy technology will not, by themselves, be sufficient to bring about the scale of change necessary, and therefore an emphasis on leveraging significant structural change in social and

economic systems remains critical (Arvesen, Bright and Hertwich, 2011; McCormick *et al.*, 2013). The problem is a combination of developing initiatives that will help facilitate the types of behavioural change required (for example, in lifestyle, consumption, and commuter behaviours), and at the scale required (that is, across whole communities of people, scaling up to regions and nations). To date, due to a paucity of evidence, it is difficult to undertake a meaningful comparative analysis of what approaches are demonstrably more effective in eliciting the desired changes.

It must be acknowledged that when it comes to community sustainability policy, the field is still quite young, and while it remains an area of rapid development, in terms of robust comparative studies of community projects, it lags behind several other social policy domains, such as crime reduction and rehabilitation, health and epidemiology, and poverty alleviation. Yet there is clearly a need to confirm the impacts, with reliable evidence, that domestic energy conservation and energy-related behaviour change workshops have, and this means introducing a shift in research emphasis from inputs and outputs to longer term outcomes, even though these are much more difficult to track. Moreover, depending on the evaluation paradigm used, the presence of counterfactuals (what would have happened anyway) may need to be accounted for and then discounted from the findings (Gertler *et al.*, 2011; Thomas, 2015). However, doing so may not be required if one uses a developmental evaluation approach which takes account of complexity science (Patton, 2011), as will be discussed in a subsequent section. Developmental evaluation is a recent addition to the pantheon of evaluation approaches, and seeks to “help the initiative to develop through iterative cycles of learning and adaptation” (McDonald, 2016: 79). The conditions of complexity under which CBS initiatives operate warrant a method by which the learning acquired by the practitioners is valued and captured. Unfortunately, at present, traditional evaluation approaches tend towards valorising performance against outcomes on the basis of funder accountability and instrumental learning.

But the problem of evidencing impacts to enable informed comparative analyses is not only restricted to community sustainability initiatives; this is a concern that is endemic to international development and aid (IDA) projects as well. In his comprehensive review of the international aid sector, Ramalingam cites a number of research studies and reports that suggest there is no conclusive evidence that foreign aid projects actually work, that there is a "propensity of aid agencies to repeat mistakes ad infinitum", and that even worldwide endorsement of the Millennium Development Goals has, in practice, led to negligible change over the baseline data (Ramalingam, 2013: 10). He goes so far as to describe the overall trend as "dismal". As Ika reports, a "recent McKinsey-Devex survey suggests that 64% of donor-funded projects fail" (Ika, 2012: 30), and considering that aid to Africa alone since the 1940s amounts to approximately US$1 trillion (Ika, 2012), this constitutes a significant cost with diminishing benefits (Ika and Donnelly, 2017).

Common to both international developmental aid projects and community sustainability initiatives is a reliance on the use of indicators that serve as independent metrics to track changes in both magnitude and direction. In principle, this approach is theoretically sound: by identifying key sustainability indicators (SIs) before and after an intervention, any measure of difference between the two may be attributed to the efficacy of the intervention (assuming third or extraneous variables are accounted for). This kind of approach reflects the rigour of climate science due to its approximate emulation of the gold standard of the experimental method. Unfortunately, the situation is more complex, and this is explored further in the next section.

2.2.2. Universal indicators: Fuelling a false sense of evidence?

Following a detailed analysis of sustainability indicators drawn from across a wide cross-section of institutions, research organisations, and United Nations projects, Bell and Morse conclude that there appears to be a "failure to

achieve an objectively verifiable scientific measurement of sustainability" (Bell and Morse, 2008: 195). This is consistent with other reviews of sustainability indicators (e.g., Bond and Morrison-Saunders, 2009; Garnåsjordet et al., 2012; Mori and Christodoulou, 2012; Turcu, 2013).

As discussed previously, such failure might be attributable to the multi-scalar, multi-dimensional complexity of interrelationships and the socio-technical context dependencies that make implementing sustainability so challenging (Geels, 2005; Geels and Kemp, 2007; Smith, 2007; Kern, 2012; Einsiedel *et al.*, 2013), and some have argued for a need to more explicitly translate commitments to sustainability into a set of workable evaluative criteria that can be more readily implemented (Gibson, 2005). The use of indicators to measure sustainability is already a well established discipline in itself, with at least one journal ("Ecological Indicators") and many studies offering comprehensive reviews of extant sustainability indicators (SIs) in terms of how they are formulated, weighted, normalised, scaled and methods of aggregation (e.g., Singh et al., 2009; Xia et al., 2014). There is certainly no shortage of indicators available, and yet, due to the contested nature of sustainability itself, as Bell and Morse (2008) suggest, attempts to monitor and evaluate project activities congruent with sustainability outcomes may be an attempt to measure the unmeasurable.

Many of the challenges development and sustainability endeavours face have to do with systemic resilience to efforts to induce change. But, in addition to these 'external' or contextual challenges, many projects exhibit an on-going problem in "assessing and understanding impacts", so that "[d]espite high expectations, evaluations have historically been dismal at providing such information" (Ramalingam, 2013: 111). In their comparative analysis of conservation projects located in three developing countries, Agol, *et al*., found that the project proponents, that is, managers, evaluators and funding bodies, experienced difficulty with understanding and demonstrating the impacts of the

projects as a consequence of the processes deployed for M&E purposes. Common to each project were challenges in establishing a robust evidence base, concerns about the scale of any impacts, and outcome measurement challenges (Agol, Latawiec and Strassburg, 2014).

Part of the challenge Agol, *et al*., observed was in the selection of M&E methods, with a tendency for project proponents to select and concentrate on physical, tangible, and quantifiable indicators because they were thought to be cheaper and easier to measure. Unfortunately, however, in many instances this is *not* the case, and M&E that relies on the collection of quantifiable measures encounters significant methodological challenges. As Dahl points out, indicators are only as good as the data that supports them (Dahl, 2012: 3), and if these data are methodologically tainted by poor collection methods, the measure is of questionable value. For this reason, Agol et al., adopted a mixed methods approach in their comparative analysis, and triangulated their evidence base and findings using a combination of quantitative and qualitative data (Agol, Latawiec and Strassburg, 2014).

The study by Agol, *et al*., (2014) is instructive for M&E approaches to community-based sustainability projects for two reasons. First, because each of the three projects they evaluated used relatively standard and common SIs which were not calibrated to whatever was locally valued or salient, and seemingly suffered by not being supported by robust data. This flies in the face of studies which suggest that establishing common indicators on a local spatial scale is thought to contribute to developing a coherent assessment framework (Mascarenhas *et al.*, 2010). Secondly, the projects each lacked resource and expertise capacity or were deficit in support and infrastructure. Even in the UK, these are similar to the challenges low-carbon and community-based sustainability projects grapple with (e.g., Middlemiss and Parrish, 2010; Hobson, Hamilton and Mayne, 2014; Hobson, Mayne and Hamilton, 2016).

Assuming, for argument's sake contrary to Bell and Morse (2008), that sustainability *might* lend itself to measurement, available research suggests that developing indices endorsed and valued by members of the local community appears to offer a potentially viable way forward (Bell and Coudert, 2005; Reed, Fraser and Dougill, 2006; Bell and Morse, 2010; Mori and Christodoulou, 2012; Giampietro and Saltelli, 2014).

The value of locally salient outcomes is lent support by a case study of the Joseph Rowntree funded *Good Life Initiative* (GLI) deployed in a deprived community in northern York, UK. The initiative was a community-based sustainability project, and the case study reports how its initial efforts to engage the local host community with the objectives the project had prioritised met with a lukewarm response (Cinderby *et al.,* 2014). After a re-evaluation, reminiscent of double loop learning (Argyris and Schön, 1978), the project team re-purposed the project by identifying and privileging the priorities of the local community, and linked these with the project's own objectives.

Following this, the project reported more success in efforts to elicit meaningful engagement and progress among members in the community (Cinderby *et al.*, 2014). This confirms the value of developing community projects around strong consultation efforts (e.g., Fricker, 1998; World Resources Institute (WRI), 2009; Ramírez and Brodhead, 2013), and may help to counter-balance what has been termed 'pathological autopoiesis', a condition of organisational misalignment that is characterised by an organisation turning away from engagement with its medium (Lemon, Craig and Cook, 2010).

While engaging members of a local community in identifying sustainability indicators and related metrics is helpful both as a source of environmental management data as well as a means of engagement (Fraser *et al.*, 2006), there has been little research to date into how such indicators are integrated and employed as part of the M&E regimes for CBS initiatives

(Dunkley and Franklin, 2017). The emphasis has tended to be around performance monitoring against outcomes for purposes of accountability and instrumental intelligence. There remains a dearth of research on the actual processes through which practitioners learn about learning how to do sustainability (or international development). This is what second order learning concerns, and falls within the emerging developmental evaluation approach (e.g., Patton, 2011).

One reason for a lack of research into the experiences of CBS actors in using M&E techniques may be because research attention continues to be drawn to the significant number of challenges inherent to developing meaningful criteria with which to measure sustainability, methodologies for implementation, and efforts to track outcomes (e.g., Faber, Jorna and Van Engelen, 2005; Hezri and Dovers, 2006; Singh et al., 2009; Dahl, 2012; Turcu, 2013). While a seemingly substantial grey literature about practitioners' learnings exists in the so-called blogosphere, the academic literature still tends to attend to instrumental learning (Krause and Welp, 2012; Wiek *et al.*, 2014; Bradbury and Middlemiss, 2015).

2.2.3. Monitoring and evaluating community-based sustainability initiatives: The practitioner's experience:

The value afforded by monitoring and evaluating (M&E) impacts was not news to the community-based initiatives reviewed in 2014 by Hobson and her colleagues as part of the EVALOC (EVAluating LOw Carbon communities) research project (Hobson, Hamilton and Mayne, 2014; Hobson, Mayne and Hamilton, 2016). Indeed, many of the low carbon community groups interviewed reported that undertaking M&E activities was productive, that doing so helped them to reflect on their practices, and was a source of new ideas and ways of doing things. Others reported that doing so helped them legitimise their work by having the evidence of impacts in one place which enabled them to build

partnerships with other organisations. Having reliable M&E processes in place was thought to facilitate the enthusiasm of project participants and group members by being able to evidence the impact their work was having (Hobson, Hamilton and Mayne, 2014; Hobson, Mayne and Hamilton, 2016).

However, despite such broad endorsement of the value for undertaking monitoring and evaluation among community-led project practitioners, Hobson et al., observe that representatives of some low-carbon community groups also expressed doubt about the relevance of engaging in M&E, while others saw the main focus of their work as doing the activities rather than “accounting for them after the fact” (Hobson, Hamilton and Mayne, 2014: 130). As these authors conclude, there is an evident need to help such projects “hone their 'conceptual' tool-kits, and link such 'internal' learning to affect and saliency 'on the ground'” (Hobson, Mayne and Hamilton, 2016: 15). This observation is supported by other studies (O’Brien and Sarkis, 2014), suggesting that there is a need for M&E to be made more accessible and user-friendly for community-based projects.

A number of the project representatives the EVALOC researchers interviewed expressed caution that any M&E findings might be used by funding and institutional bodies to maintain the status quo by suggesting that the projects are doing fine without their support (Hobson, Hamilton and Mayne, 2014). The expression of anxiety and caution in the face of undertaking M&E activities is common to project deployment and management scenarios. As Ramalingam (2013: 110) observes in relation to international development projects, “[e]valuation is often seen as predominantly a tool for external accountability, and therefore faces a great deal of defensiveness and resistance: for many, evaluations may as well be called inquisitions”.

While such caution should not be discounted, the use of M&E protocols remains one of very few options for CBS projects to be able to demonstrate

evidence that their work is having an impact. The need to evidence impacts becomes ever more pressing as UK policy-makers look to community-based projects as a key vehicle through which to help deliver on action against climate change (UK Parliament, 2008; Databuild Research & Solutions Ltd, 2013; DECC, 2014).

Under conditions of heightened policy expectations coupled with the demands from agencies for transparent and accountable practices linked to results-driven funding opportunities, community-based projects will likely be subject to increasing scrutiny and higher standards against which to demonstrate their added value in mitigating the causes of climate change and helping to facilitate local adaptations to its effects. It is clear then that the myriad challenges involved in evidencing progress against sustainability outcomes will have to be resolved. To date, proposals that have been put forward include identifying valid suites of measures (be these the use of sustainability indicators [SIs] or some other set of metrics) and ensuring that project tools are usable by practitioners in the field in an effort to facilitate and enhance performance management, practice development and adaptive learning from practitioner experience (Hobson, Mayne and Hamilton, 2016).

2.2.4. Making sense of what changes as a result of community-based interventions:

Having outlined above many of the challenges inherent to attempting to 'measure the unmeasurable' (Bell and Morse, 2008), the value of evidencing impacts of a project's interventions still warrants the effort to circumnavigate and mitigate these obstacles. These reasons include, inter alia, accountability and demonstrating an initiative's value for money, but, more critically, to enable the accumulation of learning from what works to promote the kinds of changes in the social and economic structures necessary for mitigating climate change (Arvesen, Bright and Hertwich, 2011). Much learning and innovation *is* being generated by CBS practitioners. Unfortunately, traditional M&E approaches do

not seem to be well equipped to capture this in a meaningful and coherent way, since the focus of these approaches is on the point of arrival rather than the quality of the journey towards CBS (and IDA).

At this point in the literature review, it is worth revisiting what is thought to change as a result of the interventions deployed by CBS practitioners, and more importantly, how these changes are identified and made sense of relative to project outcomes and the intended direction of travel, because the answer to this underpins what gets measured and becomes evidence. In part, this question taps into the underlying theory of change which the project itself helps to elicit (Weiss, 1995; Rogers, 2014).

It is already recognised that efforts to influence social practices are situated within a complex panarchy (Gunderson and Holling, 2002; Gotts, 2007) of social, economic, and political forces that constrain the degree of change that might be possible. Many of these influences occur at scales that are larger or smaller than the system of interest, and which move at faster or slower rates of speed than the specific variables of interest, as per the panarchy model. Still other influences may only be indirectly connected to the domain of interest, and yet through a complex web or network of relations among system components, nevertheless exert an effect that could not necessarily have been anticipated beforehand.

As an example of unanticipated outcomes, even in a city that favours its reputation for its pro-environment credentials, in Leicester, UK, efforts to translate energy policy from a national to a local context incurred significant challenges (Lemon, Pollitt and Steer, 2015). In this case, the challenges emanated primarily from shortfalls in the effective coordination among public sector bodies and local authorities who were hampered financially from taking action. However, this resulted in co-benefits, such as an enhanced sense of a local community along with accrued benefits to the area's reputation, and an

associated boost in employment, of the initiative being more readily obtained than actual demonstrable reductions in the emissions of greenhouse gases. But it is not simply the constraints of intersecting socio-political forces that affect the nature and scope of the changes a community-based sustainability initiative is able to elicit. Indeed, it may be that the lifespan and scale at which the initiative operates limits the overall contributions to change these endeavours can make (Reeves, Lemon and Cook, 2014).

In reflecting on the generally poor evidence base that characterises sustainability and developmental initiatives, Burns and Worsley make the point that maybe the criticism has been inaccurately focused on M&E efforts. Rather, they propose, “the failure to demonstrate results is [not] simply a measurement difficulty […] it is a failure of approach”, that is, the “problem is that solutions to problems within complex environments are constructed as if they weren't complex” (Burns and Worsley, 2015: 18).

This is a point with which Ramalingam agrees, when he writes that “[m]any failures in public policy, business, and civil society can be attributed to the application of inappropriate assumptions and principles to problems” (Ramalingam, 2013: 138). And again, that “the aid system's pronounced addiction to seeing the world through a classic reductionist lens is not trivial: such processes lead to problems being defined and solutions chosen prematurely to give a sense of closure and certainty” (Ramalingam, 2013: 269).

In the Leicester city study (Lemon, Pollitt and Steer, 2015), and the study reporting on how inherent limitations of the CBS initiatives themselves constrain the efforts to effect community change (Reeves, Lemon and Cook, 2014), the source of failure to demonstrate meaningful impacts resides not with the M&E protocols that were put in place, but with the context in which the endeavour was applied and with the planned structure of the initiative, respectively. A recent study of 18 community-based sustainability (CBS) projects across the

UK found that it was quite common for there to be a misalignment between the project outcomes and the interests and objectives of community groups (Dunkley and Franklin, 2017). These cases exemplify the error inherent to attempts to implement linear solutions to complex problems.

This problem, by no means unique to CBS endeavours, is one of epistemology. It involves the clash or jarring effect of attempting to fit an epistemologically square peg into an epistemologically round hole, where the former may be characterised as informed by a paradigm of linear causality, and the latter characterised by what is becoming increasingly referred to as complexity (Lyons, 2005; Mitchell, 2009; Allen, 2010; Bell and Wilby, 2012), or post-normal, science (Funtowicz and Ravetz, 1993; Tognetti, 1999; Flyvbjerg, Landman and Schram, 2012).

2.2.5. Evaluation for learning:

The challenge therefore is for CBS practitioners to develop their capacities to navigate this emerging paradigm, to understand how change works and how it might be triggered and harnessed, and how to evidence impacts and to account for the ripple effects that interventions in one part of the system trigger in other, more remote regions (Reeves and Mitchell, 2016). In other words, and to reiterate the aim of the present research, how might a CBS project become a system of learning about what works to elicit change in the direction of sustainability outcomes? How do CBS actors understand their roles in the facilitation of change? How is knowledge relevant to impact monitoring and evaluating generated and utilised? How do CBS practitioners make sense of the complex adaptive systems within which they are embedded to identify, evaluate, and evidence change?

It is clear that novel adaptive approaches to monitoring and evaluation (M&E) are warranted. Allied with this, it is also apparent that CBS initiatives, along with international developmental aid projects, must be more adept at

learning and designing themselves while under operational conditions. This will likely mean that projects have to acquire the skill set and aptitudes for engaging reflexively in double-loop learning (that is, critically revisiting operational assumptions) and deutero-learning (or learning about learning processes, a meta-learning).

These questions motivate the present research, and a recently published study makes a broadly similar case. Following work with 18 UK CBS groups, the authors reflect on the need for CBS initiatives to approach M&E from a reflexive and interpretive perspective in order to enhance learning by the initiative, funders, and policy-makers alike, even though this type of "stochastic art" is challenging for all parties (Dunkley and Franklin, 2017). Their recommendation for this is based on Patton's developmental evaluation approach (Patton, 2011), which is a way of attending to project processes thereby enhancing learning, rather than on project outcomes which satisfies accountabilities. Dunkley and Franklin (2017: 114) call for "more in-depth qualitative project case studies to explore how communities negotiate the evaluation process". Further, while the so-called 'blogosphere' may capture practitioners' reflections on learning, very little of this seems to reach the critical scrutiny of academic literature.

The present research endeavours to add to this currently sparse literature by considering the evaluation of a case study CBS initiative as a developmental learning process. This dovetails with Patton's approach, described as an "evaluation under conditions of complexity", one which "supports innovation *development* to guide adaptation to emergent and dynamic realities in complex environments" (2011: 1. Original emphasis).

While traditional evaluation intends to validate models and provide accountability to sponsors, developmental evaluation is concerned with helping a project's development and adaptation (Fagen *et al.*, 2011). The difference

between the two is, Fagen et al. (2011) argue, in the mind-set with which evaluation is approached, wherein traditional evaluations emphasise the project's effectiveness, its impact, and its compliance, while developmental evaluations emphasise a project's innovation and learning (Fagen *et al.*, 2011; Gates, 2016; Hayes, Witkowski and Smith, 2016). Developmental evaluation supplements traditional evaluation; it does not displace it.

The evaluation of projects to facilitate innovation and learning broadly concerns considering an alignment between the objectives of the initiative and the community needs and values, as well as between the design of the project and its M&E frameworks given the context of operation to which it is deployed. Consequently, it is useful to introduce a way of thinking about aligning problems and solutions, and this is accomplished through drawing on a vocabulary from sociology, and social movements research in particular.

2.3. Framing problems and solutions:

In this section, the concept of framing is introduced. In recent years, the concept has been increasingly appropriated for communication purposes, especially with respect to how messages are 'framed' in order to appeal to an audience's values (e.g., Ereaut and Segnit, 2006; Lakoff, 2006, 2010; Segnit and Ereaut, 2007). However, this more recent usage is not how it is used in social movements research, nor does it reflect the origins of the concept. In social movements research, framing may be thought of as similar to how dynamic systems science construes basins of attraction (Snow *et al.*, 1986, 2014; Oliver and Johnston, 2000), in that the term refers to an interpretation or understanding of events around which people gravitate *en masse*.

2.3.1. History and development of a concept:

In a 1954 presentation[5] to the American Psychiatric Association (APA), Gregory Bateson introduced the concept of 'frame' (Bateson, 1972). In this essay, Bateson begins by tracing the history of how language operates at many different levels simultaneously, and credits the lineage of research making similar points, including Whorf (Whorf, 2015), Whitehead (Whitehead, 1978), Wittgenstein (Wittgenstein, 1968), and his own work in psychiatry (Ruesch and Bateson, 1951).

Across this lineage, Bateson notes two distinct levels at which language operates, the meta-linguistic and the meta-communicative levels of abstraction. The former concerns the subject of the discourse as language itself, and he illustrates this with reference to the word 'cat' as a member of a class of objects. The latter distinction concerns the relationship between interlocutors, and may be thought of an implicit guide for the listener to use in order to interpret the speaker's utterance. An example is using the phrase, “I'm only joking”. As a meta-communication, it involves a recursion insofar as it gives a message about how a message (signal) is to be interpreted. Bateson's use of the term provides the listener or parties to an interaction a way of understanding the nature of the interaction. It is a semiotic as to 'what is going on' in the interaction.

2.3.2. Sociological applications:

Twenty years later, renowned sociologist, dramaturgist, and ethnomethodologist Erving Goffman recovered the term frame, and in his seminal sociological text *Frame analysis* (1974), brought the term to bear on sociological research of everyday behaviour. In crediting Bateson's original formulation of the term, Goffman recruits the concept of frame as attempting to answer the question “What is going on here?”.

5 The paper, “A theory of play and fantasy”, was delivered at the APA Regional Research Conference in Mexico City, and reprinted in Bateson (1972: 177-193).

For Goffman, frames concern the organisation of an individual's experience, or “schemata of interpretation”, that renders “what would otherwise be a meaningless aspect of the scene into something that is meaningful” (Goffman, 1974: 21). For Goffman, the application of frames as implicit guides with which to interpret experience do not require any additional intellectual effort, remarking that “it seems that we can hardly glance at anything without applying a primary framework, thereby forming conjectures as to what occurred before and expectations of what is likely to happen now” (Goffman, 1974: 38).

In elaborating his own use of the concept, Goffman employs the idea of 'keying' to describe how frames elicit or evoke ways of interpretation, suggesting that in the use of frames “what is being described is not the frame as a whole but the keying it sustains” (1974: 82). Keying refers to the 'tone' (a musical reference Goffman employed) with which the bracketed experience, the 'strip' as Goffman terms this segmentation of lived experience, is understood.

The musical reference is intentional, and should be understood in the same way as the key of a piece of music: what key is the score in? The key is sustained by the frame within which the action occurs. This is better elaborated in how Goffman (1974: 10-11) describes his use of the term 'frame' as a means by which “definitions of a situation are built up in accordance with principles of organization which govern events – at least social ones – and our subjective involvement in them”. More so than Bateson, Goffman's recruitment of frames invokes a set of rules, and the notion of keying sets the rule framework within which the interpretation of social events is filtered by transforming the definition of activities, etc., that are already meaningful from one perspective or frame, in terms of another frame, such that they are “seen by the participants to be something quite else” (Goffman, 1974: 45).

2.3.3. Framing and social movement organisations:

Influenced by Goffman's deployment of frames as a way of analysing how people perceive and interpret the meanings of everyday events, a little over a decade following the publication of Goffman's *Frame analysis*, the concept of frame analytics was applied to further the understanding of social movements research (Snow *et al.*, 1986).

The use of the term frame, and framing, was to render intelligible how people came to participate in social movement organisations (SMOs). By emphasising how frames enable people to make sense of their experience, the concept was applied to SMO research in its functional capacity as a dynamic basin of attraction, in which prospective and currently involved SMO participants encountered a common interpretation of socio-political events. This basin of attraction, or systemic centre of gravity, is described by Snow, et al., (1986: 464) as an alignment of frames, which they posited as the “necessary condition” for participating in a movement, because the alignment operated as a bridge between the interpretive frames of individuals and a given SMO.

In this usage, the notion of frames is simply the interpretive lens with which one views the world and makes sense of it. There are are no claims to cognitive or even phenomenological elaborations, and the concept is simply adopted wholesale from Goffman's work and applied to a theoretical zone of shared meanings between individual actors and a SMO with which the actor may participate.

In elaborating the idea of frame alignment as a dynamic attractor that 'pulls' people towards a SMO as a common cause, the main theorists behind this analysis, David Snow and Robert Benford, identify that people are attracted by a shared way of defining the nature of the problems against which they opt to mobilise and the common view of what constitutes the resolution to this problematic framing. In their terminology, these common ways of interpreting

problems and solutions are referred to as diagnostic and prognostic frames respectively (Snow and Benford, 1988). In this formulation, diagnostic framing involves the “identification of a problem and the attribution of blame or causality” (Snow and Benford, 1988: 200), while prognostic framing does not only have the purpose of identifying solutions to the problems specified diagnostically, but also serves to generate “strategies, tactics, and targets” (1988: 201) with which to address the causes diagnosed.

The identification of diagnostic and prognostic framing is a very helpful heuristic with which to progress an analysis of how front-line CBS practitioners make sense of the arena within which they find themselves operating. Community-based sustainability (CBS) initiatives may be regarded as centres of gravity to which people are attracted due to a common understanding of the problem (diagnostic framing) and the scope of solutions to be applied (prognostic framing).

2.3.4. Diagnostic and prognostic frames:

The proposition that people come together around common interpretations of a situated socio-political problem and its prospective remedial solution is well supported empirically in social movements research. In a study on homeless mobilisation (Cress and Snow, 2000: 1071), these parameters were identified as playing “an important but unrecognized role in the attainment of desired outcomes”.

The diagnostic frame “problematizes and focuses attention on an issue, helps shape how the issue is perceived, and identifies who or what is culpable, thereby identifying the targets or sources of the outcomes sought” (Cress and Snow, 2000: 1071). What is key in the notion of problem diagnosis is that a problematic situation is identified in terms of its constituent nature, and that the cause thereof and the culpability for which is attributed to particular agents, drivers, or forces (Benford and Snow, 2000).

The second core framing task is prognostic framing, and this is usually affiliated logically with the problem diagnosis. It “involves the articulation of a proposed solution to the problem, or at least a plan of attack, and the strategies for carrying out the plan” (Benford and Snow, 2000: 616). In other words, “what needs to be done to remedy [the problem]” (Cress and Snow, 2000: 1072). While the prognostic framing of a situation would logically be contingent on how well the diagnosis is articulated, and there is empirical evidence of a correspondence between the diagnostic and prognostic framing by SMOs (Snow and Benford, 1988; Benford and Snow, 2000), the correspondence is within a range of consensus about the specifics of how the problems should be tackled, and hence it is the prognostic framing that tends to be the point at which SMOs within a shared focal identity differentiate from each other (Benford and Snow, 2000). Among CBS initiatives, one may differentiate between the approach taken by Earth First activists and by Transition Town groups, between those involved in local farmer’s markets and food webs, and those who focus exclusively on helping to shift communities towards adopting more renewable sources of energy.

Some caution is needed in how diagnostic framing tasks are accomplished. As Snow and Benford (1988) observe, if the problem is diagnosed in ways that are hopeless or cataclysmic to the point that ameliorative action is unlikely, the framing inadvertently constrains the generation of viable prognostic framing. Similarly, if the nature of the problem is constituted in highly technical or expert language, rendering public debate and engagement irrelevant, this culminates in a lack of clarity regarding how to develop any meaningful action. A third constraint is that, while there may be agreement about the nature of the problem, there may also be less consensus regarding its causality, or the characteristics that maintain it. Consensus about the nature of the problem is necessary to draw people together.

Prognostic framing may be subject to the same constraints. If the amelioration of the problem diagnosis is such that it is overly technical and involves expertise, or high levels of specialism, or the language that is used excludes the participation of the public, there will be a corresponding lack of clarity on how participants are to proceed in addressing the problem. The centre of gravity will be less likely to cohere a group of people who feel able to address the diagnosed problem meaningfully.

However, the diagnostic and prognostic framing concepts provide a useful heuristic with which to consider in broad, and generally non-partisan terms, how problems are understood and how solutions are considered to ameliorate them. There are clear applications for CBS initiatives to use this heuristic in terms of clarifying their own position and the positions of stakeholders, funders, and beneficiaries in order to consider the degree of alignment between how problems are understood and the solutions that CBS initiatives offer. Moreover, an alignment between the two framings may also help inform the monitoring process, with CBS practitioners being sensitive to recognising that if a solution is unrelated to the problem definition, then one – or both – of these warrants a closer look. Consequently, this heuristic may contribute to single and double loop learning, especially if used in conjunction with Action Research, which will be discussed in the next chapter, under methodology.

2.3.5. Frames and meaning generation:

Framing is a way of making sense about the world. It is a process through which experience is interpreted, bracketed, and made meaning of. Even the basic notion of whether or not something is understood as problematic, and therefore is part of the diagnostic framing, is drawing a distinction around that experience, making sense of it, and sorting the experience into some or other form of order. The frame shapes and influences what is thought to fit within its boundaries, functioning like an instruction to

“’[a]ttend to what is within and do not attend to what is outside’” of the frame (Bateson, 1972: 187). A literal example of a picture frame cuts the framed picture off from the rest of the wall, makes the picture the focus of attention by emphasising that what the frame contains is in some way different from what is outside. Bateson intended the concept as a meta-communicative semiotic to guide participants in how the experience (or text) is to be interpreted. In his own earlier work with Jurgen Ruesch (Ruesch and Bateson, 1951: 158), Bateson had not yet established the term 'frame' referring instead to 'meta-communication', a process whereby “the participants communicate not only content, but also instructions on how to interpret a given message”, and which also provides “the necessary cues to initiate appropriate action and to understand the actions of others” (p. 167).

In his calculus of indications, George Spencer-Brown proposed the provocative claim that “a universe comes into being when a space is severed or taken apart”, such that “the universe cannot be distinguished from how we act upon it”, and that since “the boundaries can be drawn anywhere we please […] the world may seem like shifting sand beneath our feet” (Spencer-Brown, 1973: v). By drawing a distinction, a (physical, biological, mathematical, linguistic, etc.) universe is brought forth in that a difference between two things is introduced – a space is cleaved and, in Batesonian terms (1972: 453. Emphases removed), constitutes information as “a difference which makes a difference”. A wall is distinguished by the frame that contains a picture.

For Spencer-Brown, an indication cannot be made without drawing a distinction, and a distinction is composed by “arranging a boundary with separate sides so that a point on one side cannot reach the other side without crossing the boundary” and once drawn, these distinct “spaces, states, or contents on each side of the boundary […] can be indicated” (1973: 1). Once a distinction is re-distinguished, i.e., reiterated, it becomes more reified, or 'real', until it becomes experienced as thing-like, a conceptual abstraction. The

original distinction begins to take on a life of its own. As the distinction continues to be re-distinguished it moves past being a distinction and becomes a contextual frame which includes and excludes other distinctions. It becomes, in other words, a communication about a communication, such that it can instruct one to pay attention to *this*, but not to *that*.

In Bateson's 1954 lecture, he describes frames as a category or set which are neither physical (i.e., out in the world) nor logical (i.e., not cognitive), but which, like the difference between the map and the territory is found in the interaction between the two. A correspondence between the enactive theory of cognition and framing therefore seems to be tightly interwoven. Both describe an interactional coherence between, on one hand, drawing distinctions and relating that distinction to the two spaces it introduces as a relation of difference, and on the other, an interaction between figure and ground, what the frame includes and what it excludes, as a relation of difference enacted by the perceiver.

The relations of difference and similarity between what has been framed previously therefore becomes the scaffolding through which meaning, or sense-making is constructed. Moore, in writing of sense-making in military intelligence analysis, makes this point. He describes sense-making as one involving “people [who] inquisitively (and selectively) interpret patterns by comparing observed, newly emergent phenomena to what they already ‘understand’”, such that something “makes sense because its pattern is similar to something they previously have seen and that made sense to them” (Moore, 2011: 7). This seems to be what Weick refers to in his concept of a residuum that is generated through sense-making activities (Weick, 1995; Weick, Sutcliffe and Obstfeld, 2005). This concept is explored in more detail in the following section.

It is important to not lose track of the generative mechanisms involved. The residuum is neither external nor internal to the sense-making organism, nor

does it involve an economy of representations. From motile bacteria swimming uphill in a sugar gradient to CBS front-line practitioners defining problems and solutions, “organisms regulate their interactions with the world in such a way that *they transform the world* into a place of salience, meaning, and value […] through the organism’s sense-making activity” (Thompson and Stapleton, 2009: 25. Added emphases). What corresponds to the pattern of the residuum constitutes the frame against which new experiences are compared and which determines whether something will or will not fit. As Dervin (1998) comments, frames can be either bridges or gaps and constraints to new ways of knowing, and Weick’s notion of residuum can be understood as a frame (of reference) that constrains what is identified as a pattern, as Weick explores in his seminal case study of Norman Maclean's Young Men and Fire in the Mann Gulch disaster (Weick, 1993).

This goes to the heart of what CBS practitioners are engaged in with respect to how they learn and how they understand the scale and intensity of changes accruing to their interventions. CBS actors, like their colleagues in international developmental aid projects, are engaged in making sense about their contexts of operation. This is central to how they strategise to pursue one option rather than another, how they learn whether something did or did not work as intended and consequently whether it should be repeated or amended. However, the use of sense-making as a heuristic has not found much traction in the community sustainability literature to date, and therefore it is important to introduce two of its most well known theorists.

2.4. Sense-making: Two perspectives:

In a study of senior executives in American corporations, now well-known in the knowledge management literature, it was found that how the executives interpreted the business environment within which they were a part was *more*

strongly associated with high levels of performance than the accuracy of the data they had access to about that environment (Sutcliffe and Weber, 2003). What makes this such a well-known piece of research is that the findings fly in the face of assumptions that good strategic decisions are made on the strength of good data, and completely undermines the managerial adage that good decisions are only as good as the information they are based on.

What Sutcliffe and Weber's study suggests however is that what makes the difference is less the quality of the information itself, but rather the interpretive capacity, or frames the managers use in bracketing the data, to make sense of it. In an unambiguous and practical way, this study underscores the significance of sense-making.

Interest in the study of sense-making can be traced most recently to the late 1980s, and two approaches are highlighted. The first is the seminal work of Karl Weick who applied the concept of ‘sensemaking’ (note the absence of hyphenation) to organisational studies, although his work has also been influential in human computer interface research (Klein, Moon and Hoffman, 2006a, 2006b) and military intelligence (Moore, 2011).

The second approach highlighted is that of Brenda Dervin. She has drawn on the individual psychological aspects of Sense making (note the capitalisation to distinguish the approach from the phenomenon studied) as part of the study of communications and information science, and her approach has also been influential in organisational complexity research (Snowden, 2005). It is worth considering each in turn, and as each theorist uses a distinct way of writing the word ‘sense-making’, when referring to their work, this distinction will be preserved for clarity.

2.4.1. Weick: Enacted sensemaking:

For Weick, sensemaking is *enacted* (Weick, 1988). In his 1988 paper, Weick quotes Bateson's (1972: xvi) observation that an explorer never knows what is being explored until it has been explored. In effect, the journey is often only sensible or coherent in the rear-view mirror, and that sensemaking concerns putting together the fragments of experience to form a more-or-less coherent whole only in retrospect. Weick's use of the term 'enacted' stems from his argument that sensemaking involves the bracketing[6] of experience. For Weick, enactment is the generation of sense that "when people act, they bring events and structures into existence and set them in motion" (Weick, 1988: 306).

Weick goes on to explain how enactment is a two phase process involving, first the bracketing of experience according to preconceptions and second, acting with respect to these bracketed experiences "under the guidance of preconceptions" (1988: 307). As a result, the environment that is enacted is described as a residuum of change following on from the actions undertaken on that bracketed or 'slice' of experience as influenced by preconception.

The bracketing of experience occurs in the present moment through one's encounter with the world but, according to Weick (1988), gives rise to a residuum, a trace of historical bracketing of experiences which are subjected to the influences of one's preconceptions. It is the residuum of sensemaking that leads Weick to describe it as enacted, because the process of making sense is to enact a world that is then acted upon.

Without explicitly aligning himself to the works of the social constructionists, although he does later reference the works of John Shotter for example in his text on sensemaking (Weick, 1995), Weick is proposing that one

6 Although Weick uses the term 'bracketing' of experience, it is not clear if he means this in the same way as Edmund Husserl meant it in his phenomenological studies when the latter spoke of bracketing or 'epoche', because Weick neither cites Husserl directly, nor makes any reference to phenomenology.

generates a world of 'enacted' meanings through the processes of sensemaking. He argues in his 1988 paper, this enacted world of meanings is the residuum domain to which people respond, even if this is variously constrained by one's preconceptions.

It is this constrained residuum domain of enacted meanings that people respond to under crisis situations, and he explores this thesis in greater depth in his case study of the 1945 Mann Gulch fire disaster (Weick, 1993). The residuum of previous meanings can be both a springboard to knowing how to respond to novel circumstances, but the residuum can also be a constraint because it may act as a habituated response set that is insufficiently flexible to respond to novelty that does not fit the parameters of the already-known.

This is similar to what former US Secretary of Defence Donald Rumsfeld may have been getting at in 2002[7] when he said the following:

> "there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know we don't know."

As Weick's study of responding to crises shows, the enacted residuum may be adequate for both known knowns and known unknowns, but appears to be inadequate[8] for unknown unknowns, and may even hinder acknowledging the gaps to what is and can be known. One may be blinded by ways of framing experiences that they take for granted and no longer critically re-evaluate.

The concept of an enacted residuum may also help to account for how CBS project designers assume that a problem can be resolved through

7 http://archive.defense.gov/Transcripts/Transcript.aspx?TranscriptID=2636 Accessed March 27th, 2016

8 Which is not to deny the capability to adapt existing knowledge to respond to unknown unknowns. As discussed in the following section, it is this very 'gappyness' in knowing that is the impetus for Dervin's conception of Sense making.

reference to a linear theory of change or programme logic even when all of the evidence suggests that the problem is far more complex than they anticipate (Burns and Worsley, 2015). Frames – or in Weick's terms, the residuum – constrain the range of meanings available, blinding some actors to what might be more evident to others.

2.4.2. Dervin: Sense making:

Brenda Dervin's work applies the concept of Sense making to library and information science, and considers it a "mandate of the human condition" (Dervin, 1998: 36). Dervin insists that knowledge not be construed as a noun, but as a verb. For Dervin, knowledge – thinking – is "an activity, embedded in time and space, moving from a history toward a horizon, made at the juncture between self and culture, society, organization" (p.36).

For Dervin, Sense making originates at the confrontation of a 'gappyness' or a discontinuity and unfinishedness[9] in the world, and making sense is the activity in space and in time which bridges those gaps. From her perspective, knowledge and information are rarely ends in themselves, but are rather means, steps along a trajectory that the knowledge and the information enable one to pursue, typically through bridging a prior gap. Sense making is therefore a responsive effort to span a gap in what is known.

Dervin recognises that today's knowledge is sometimes the origin of tomorrow's gap. It is often difficult to overcome such constraining knowledge, as

9 While Dervin does not explicitly cite Bakhtin, there appears to be a confluence between her discussion on the unfinished or incompleteness of the world – the gap – which means reality is subject to multiple interpretations, and Bakhtin's discussion on 'unfinalisability', which posits that the world is both messy and open (Bakhtin, 1981), and 'heteroglossia', which suggests that accounts of the world are populated by many voices and tongues (*parole* not *langue*), that is, are multivocal (Bakhtin, 1984). This theme is found again in the idea of 'minor literatures' as developed most fully in Deleuze and Guattari's work on Franz Kafka (Deleuze and Guattari, 1986), which proposes a reading of Kafka as a rhizome, that it constructs an assemblage joining disparate elements together in a conjunctive synthesis "and … and … and ..." (Deleuze and Guattari, 1977), rather than a reduction to a final 'official' stratified interpretation, a closure on meaning and sense making.

evidenced, for example, in the received wisdom of a given era or a Foucauldian analysis that discloses the discursive power that governs the construction of a specific form of 'reality' such as a scientific paradigm (Kuhn, 1970). Consequently, the process of what she dubs sense *un*making is as important to the development of knowledge as sense making is.

There is a marked parallel between Weick's concept of residuum and Dervin's acknowledgement that prior knowledge can constrain or obscure new approaches or novel meanings to be generated. Prior sense can become an impediment to innovation and thinking differently.

Dervin points to the emergence of 'deviant' thinking as a process that might contribute to the unmaking of sense. Here Dervin might agree with some of the arguments offered by Deleuze and Guattari concerning 'nomadic thought', lines of flight, minor literature, and the deterritorialisation of assemblages which involves the dispersal of the rigid codes that hold components together (Deleuze and Guattari, 1987). When prior knowledge that leads to problems is unmade or dispersed by deviant and outside thought, novel connections may be made which form new bridges across such gaps. These might involve scientific breakthroughs. For example, the discovery of penicillin as mould growing on Petri dishes was as a result of Fleming not complying with the standards of laboratory sterility expected by the scientific community.

It is apparent then that, for Dervin, Sense making begins at the breakdown of sense or the gappyness of knowledge. It emerges as a response to an interruption, and recognises the power of previously established knowledge to constrain emergence of novel sense. But she also emphasises that knowledge is embodied: sense occupies a given time and a given (socio-cultural) space, underscoring the fluidity of truth claims as determined by the spatio-temporal context within which they emerge.

Dervin accepts that truth is socially constructed through the negotiation by actors who are attempting to make sense of their worlds with the terrain of established knowledge and that which is as yet unknown. Bridging these gaps is the generation of sense. Finally, Dervin explicitly recognises the affective situatedness of the sense maker, and how emotions influence – both as motivators and constraints to motivation – the processes of making sense, and this reiterates the embodied nature of how Dervin construes the generation of knowing.

Unlike Weick however, Dervin does not attempt to explore processes of enactment, nor does she appear to make any broad claims about cognition as such. Her contributions to this discussion on sense-making centre first, on the emergence of sense-making as a response to gaps, be these in the form of questions, or muddles, confusion, inconsistencies, and even anxiety, and second how sense-making is an active process of bridge building to overcome those gaps.

2.5. Sense-making, learning, and community-based sustainability projects:

In the course of reviewing recent literature that outlines many of the challenges encountered in demonstrating the added value offered through community-based sustainability (CBS) and international developmental aid projects, two broad classes of challenge have emerged. The first diagnostic frame describes how projects struggle to demonstrate evidence of their impacts as a result of how evidence is collected and evaluated. This explanation generally points to problems in the construction of monitoring and evaluation (M&E) frameworks, the choice of indicators used, practitioner capacity and skills to undertake M&E activities, and even whether changes in the sustainability of communities can be measured.

The second diagnostic frame locates the source of the challenge in how project designers and funders think about the nature of the problem and how it might be resolved. According to this diagnosis, the problem is constituted in a misalignment between the objectives of the project and the objectives of the community. An alternate account is that the design of the project is itself inadequate, or misaligned, relative to the complexities of the problem being tackled.

Using the language of diagnostic and prognostic framing, it becomes evident that how the problem is diagnosed directly influences how the solution (prognostic) frame will be developed and applied. If the first understanding of the problem (M&E framework centred) is accepted, the solution involves training the practitioners in more effective M&E techniques, boosting project capacity, enhancing M&E frameworks, drilling down into designing more valid and accurate indicators, and so on. The second framing of the problem (project design centred) will not be ameliorated through any of the previous potential remedies, as the problem is in how projects are designed, thought through, and applied.

For CBS and developmental aid project workers, this is a highly unsatisfying state of affairs. Practitioners, policy-makers, funders, and perhaps the general public are likely to all agree that something is not working as one would expect it to. Given the significant resources invested in international aid programmes, and more recently, into community sustainability activities, the problems continue. As was discussed in Chapter 1, the threats arising from climate change and the Anthropocene cluster of human-induced changes to the planetary systems are overwhelming, and they continue to escalate in severity and seeming intractability. A critical question is whether, for all of the investment in addressing these problems, any substantive difference has actually been made to mitigate these concerns? The answer, even from a non-critical observer, is likely to be that very little seems to have changed, and this is likely

due to the sheer complexity and interconnectedness of the problems that are manifest.

In the face of such complexity it is important that CBS and development projects are equipped with the capacity to learn adaptively. This means that project workers and managers are able to engage in single loop, double loop, and deutero-learning, can engage critically with the founding assumptions that gave rise to the type of interventions in use, and can engage in what Dervin termed sense *un*making. The latter requires that project workers are able to identify how they diagnostically and prognostically frame issues, how they make sense of experiences and how their thinking might be constrained by what Weick termed the residuum.

Frames arise initially as distinctions that are reified through re-distinction as points of socially ascribed coordination about how the world is thought to be. Once agreed, they begin to take on life of their own, as their origins as punctuated sense-making recedes into a forgotten past. In framing, abstract concepts are assembled in a recursive series of confirmations, used in everyday speech to refer to abstractions that acquire social coherence, and are treated as real things. As a conversation unfolds, talk is understood in relation to other talk, meanings of an utterance are uncertain until they can be interpreted via the frames that constrain *différance* (Derrida, 1978). Ambiguity is reduced as previous meanings become the context or frames for future utterances. Dialogue proceeds along the cusp of uncertainty, where on one side of the threshold non-sense is sense yet to be made, while on the other, sense-making is a process of casting a web of significance assembled recursively, with previous frames lending contextual coherence to each moment of enacting the world.

When the aim of the present study into how CBS practitioners might become systems of learning about what works to elicit change is considered in

light of this discussion, it may be anticipated that as the practitioners confront the complexity of discerning sense from non-sense, signal from noise, the sense they generate is within the context of those frames that have been previously negotiated and agreed upon. As a result, what the practitioners interpret as meaningful with respect to the broad binary distinction between diagnostic and prognostic framing will be shaped by what has been established previously. These exist as a series of recursive and mobile frames, constraining ambiguity, and guiding the generation of sense-making and the production of meaning. These frame whether changes will be noticed, and how change is interpreted as falling within a diagnostic or prognostic category. Frames also constrain the extent to which such changes are attributed to the project's intervention strategy, and thereby the scope for innovation and learning available for front-line CBS practitioners.

2.6. Chapter synopsis:

This chapter has introduced the key literatures informing and shaping the nature and focus of the research question. The chapter began with a review of how community-based sustainability (CBS) initiatives are under increasing pressure to evidence the impacts the interventions they are designed to make have on the state conditions of a host community's sustainability, whether this be in terms of the typical metrics of mitigated greenhouse gas emissions, or the more difficult to track behavioural adaptations to climate change.

In exploring this theme, it is apparent that many CBS initiatives tend to share in common difficulty in providing robust and reliable evidence of their added value to facilitate communities to mitigate and adapt to climate change impacts. Moreover, what evidence that is available is generally of a low quality, or shows variable outcomes that bring into question the degree to which, as a class of interventions, such projects are fit to bring about the necessary

changes in communities. Part of this may be due to issues around the metrics used in the evaluation of impacts, although other commentators suggest that it is a failure to transcend the reductionistic paradigm and to design solutions that are aligned with complexity and post-normal science paradigms.

This review of the challenges was followed by an introduction to two further literatures, first framing and second, sense-making. The contribution of diagnostic and prognostic frames to addressing the research gap identified previously is that *M&E of intervention activities may be expressed as the degree of alignment between the two frames*. Through reference to the two theories on sense-making by Weick and Dervin, it was noted that previous claims to knowledge, sense, frames or understanding can actually become impediments to thinking about problems differently. Dervin goes so far as to explicitly value unmaking sense as sometimes the necessary prelude to making progress.

As applied to the challenges CBS practitioners confront in demonstrating evidence of impacts and added value, it is recognised that critical and reflexive thinking is necessary. In agreement with Dunkley and Franklin (2017), the present research aims to contribute to the currently small body of qualitative project case study literature. This will be accomplished through the explication, by means of an extended case study, of how a CBS project becomes a system of learning about what works to elicit change in the direction of sustainability outcomes. The methodology for pursuing this line of inquiry is the subject of the next chapter.

3. METHODOLOGY:

3.1. Introduction and philosophical orientation:

Research as a form of inquiry is necessarily shaped by the contours of the researcher's own world-view. Such contours both constrain and shape what the researcher attends to or overlooks, assumes and finds of interest during the course of undertaking research (Denzin and Lincoln, 2000; Crowther and Lancaster, 2008). This unavoidable constitution of the researcher's 'speaking position' determines the nature of the explanations that the researcher finds satisfies the terms of the research inquiry (Guilfoyle, 2003; Feindt and Netherwood, 2011). As the product of my own world-view, the topology of the present research is structured by my interest in exploring and understanding how actors participating in a community-based sustainability (CBS) project make sense of what it is that they are engaged in and how this sense-making informs their practice. In short, how they learn to learn the effective design of their project *in situ*.

The present research methodology is located within an interpretivist perspective, an orientation that privileges how people bring sense and meaning to (i.e., interpret) their worlds of lived experience (Creswell, 2013). This tradition stands in contradistinction to positivism, which makes reality claims of an objective world that waits for us to discover and describe it with universal assertions of truth (Baumer, 1977; Bryman, 2012).

An interpretivist account posits that what we know of the world is our own engagement with it and rejects claims of direct knowledge of the world as an in-itself ('*Dasein*', or being-in-itself) (Sartre, 1958; Heidegger, 1977). Such an approach is now almost mainstream, and so foregrounding how perspectives

are situated within different socio-political contexts no longer courts controversy (Miles and Huberman, 1994; Patton, 2015).

One of the precursors to the so-called interpretivist approach to qualitative research is phenomenology. This tradition is grounded in the intractability of recognising that, with any inquiry about the world, all that can be claimed with any confidence is that the world is structured – constrained and revealed – by the perceptual faculties of the perceiving organism (Merleau-Ponty, 1962; Mingers, 2001). This perspective is a tenet of a qualitative approach to research (Bryman, 2012), and has become a key principle of complexity thinking (Patton, 2011; Byrne and Callaghan, 2014; Bamberger, Vaessen and Raimondo, 2016).

This philosophical orientation is both consistent with my own personal world-view, but more importantly for the present research is apt for the nature of the research aim to explore how a CBS project might become a system of learning about what works to elicit change in the direction of sustainability outcomes. The emphasis in this research is very much on how these actors interpret and understand their worlds and their own actions therein.

There are no quantifiable or 'objective' facts involved. This research deals with the qualitative data of what the actors construe and attribute meanings to. Any facts are 'true' only from the perspective of the actors who generate such claims. While methods exist for triangulating evidence in support of such claims, the actors and I as the researcher, each operate from within the explanatory path of 'objectivity-in-parentheses', characterised by the observer's acknowledgement of our "inability to distinguish in experience what we distinguish in daily life as perception and illusion" (Maturana, 1988b: 29). It is the acknowledgement of such recursivity that leads to a recognition of complexity which, in turn, validates the use of phenomenology as the methodological touchstone for the present research.

The balance of this chapter outlines the intended methodology through which the research aim is addressed. The research draws on the framework outlined by Braun and Clarke (2006) for the thematic analysis of qualitative data. Following a brief review of the key aims of the research, including a reiteration of the two research questions as per section 1.3., above, the strategy for sourcing, acquiring and managing the data used in pursuit of this aim is given. Validation issues are discussed in the penultimate section of the chapter. Finally, because the research involves human subjects, the ethical parameters of the study are considered, and this is followed by a brief synopsis of the chapter.

3.2. Research aim and the context of the study:

The following paragraphs reiterate the research aim, as stated in section 1.3., above, and briefly review the key tensions that give rise to the focus of the study.

There is high motivation for generating evidence from impact evaluations of community-based sustainability (CBS) and international developmental aid projects. Funders, policy-makers, stakeholders, practitioners, academics, and beneficiaries all have vested interests in knowing what does and does not work to elicit change along a trajectory associated with sustainability outcomes. However, obtaining this evidence has demonstrated a range of challenges which continue to frustrate the objective and – for some – undermine the value attributed to funding these types of endeavours.

As detailed in section 2.1., above, many of the challenges pertain to the nature of the metrics used in terms of how these are contested (Bell and Morse, 2008; Bond and Morrison-Saunders, 2009, 2011; Bell, Morse and Shah, 2012;

Mori and Christodoulou, 2012), the relevance and scalability of the metrics (Arvesen, Bright and Hertwich, 2011; Dahl, 2012; Turcu, 2013), and so on.

In addition, other researchers have argued that some of the difficulties arise as a consequence of how the front-line practitioners experience the onus placed on M&E (monitoring and evaluation) as detracting from getting on with the activities of engagement and delivery, and express concern about available resource and skills capacities to undertake effective M&E, and the accessibility of valid data to demonstrate impacts (Hobson, Hamilton and Mayne, 2014; Seyfang *et al.*, 2014; Hobson, Mayne and Hamilton, 2016).

While the foregoing studies tend to accept the appropriateness of how the initiatives, if not the approach to M&E, are designed, other research challenges this assumption. These studies suggest that the source of the problem resulting in generally poor findings from M&E of such initiatives resides less with attempts at measuring impacts, but instead may be traced to the way that such initiatives are planned in the first place (Ramalingam, 2013; Burns and Worsley, 2015; Gooding, 2016).

The present study aims to make a contribution to furthering the understanding of how front-line CBS practitioners themselves engage in the processes commensurate with learning what works in the delivery of sustainability outcomes. This incorporates how front-line practitioners understand their own roles in the facilitation of change and how they generate learning from M&E to inform practice.

3.3. Data acquisition and management:

The decision regarding the specific research method to adopt is to be determined by the nature of the research aim itself. The challenges arise

however because the modern researcher is often spoilt for choice. Traditionally, there has been a cleavage between quantitative and qualitative research methods, although even this binarity is transgressed by those approaches described as using a mixed methods design. For this reason, some are preferring to move away from the traditional division which focuses on the type of data (i.e., quantitative or qualitative) collected, and instead draw attention to the design strategy. Hence, for example, some propose the categorisation of research design strategies into fixed or flexible (e.g., Robson, 2002). Robson differentiates a fixed design strategy from one that is flexible on the basis of whether or not the design itself is pre-specified or not.

If the design can be pre-specified, typically involving the introduction of a variance into the research circumstances as a determinant of subsequent results, then the design is considered fixed. The variables are manipulated and the effects of that manipulation on a second set of variables is measured. The form of measurement is inevitably, if not exclusively, numeric: the distance of change is measured. Quantitative data are the products of a fixed design strategy.

If the design strategy is not pre-specified, that is, the design is emergent or responsive to the vagaries and peculiarities of the research circumstances, the strategy is considered to be flexible. Robson (2002) points out that while flexible design strategies can yield both quantitative and qualitative data, and that a flexible design could precede a fixed phase, the reverse is almost never true: a fixed design is unlikely to generate qualitative data, nor will a fixed design precede a flexible design. This leads to Robson's preference to distinguish research strategies based on the degree of pre-specification (i.e., fixed or flexible) rather than on the nature of the data generated (i.e., quantitative or qualitative).

Using Robson's distinction, the present research most certainly follows a flexible design strategy. There are no independent variables being manipulated, and the nature of the research setting does not lend itself to the control for third variable influences. Moreover, as this study is interested in the reported experiences of community-based project actors who continuously adapt their practices to maintain relevance as an intervention, that is who learn how to learn, the data collected will be almost entirely in the form of words and reflections, that is qualitative.

There are, under the broad rubric of flexible (or qualitative) research design, a considerable range of design traditions, each with particular advantages and disadvantages relative to the nature of the research aim, the sample (and sampling strategy), the approach to data collection and analysis, and so on. While theoretically, these reflect distinct traditions, in practice however, the boundary markers that differentiate one from the other can become blurred. For example, one might select to use an ethnographic approach to collecting data from a specific case sample and to use this build theory from the field data, in what is more aligned with a grounded theory approach. The researcher needs to be reasonably conversant in each of these traditions in order to be able to discern which tradition is better suited for what research focus however, and the following paragraphs briefly summarise these traditions in order to substantiate the specific strategy adopted in the current work. The traditions considered are, grounded theory, case study design, and ethnography, respectively.

Grounded theory:

As Bryman notes, despite the name of the grounded theory research tradition (Glaser and Strauss, 1967), it is not itself a theory, but rather refers to the "generation of theory out of data", although in practice the approach tends to be used to "generate concepts rather than theory as such" (Bryman, 2012: 387).

It is an iterative process, with data collection and analysis occurring simultaneously, and informing the developmental process in a recursive way. The analysis is typically a form of coding, which breaks the data down into constituent parts which are assigned names, and the codes are continuously compared to reveal similarities and differences which help confirm or change the code designations to better reflect the emergent insights into the data. This then leads to the generation of more robust and valid concepts, which can then be used in the development of theory.

Case study design:

Unlike grounded theory, case study design is a strategy that is shaped by the nature of the research focus itself, that is, the eponymous case. Case studies lend themselves well to a study of a complex and idiosyncratic social phenomenon within the setting in which it occurs, and the aim of the research is to surface what makes the case unit of study unique and worthy of interest in its own right. This is an idiographic approach, and is generally not concerned with arriving at universally valid descriptions that might hold across time and place, which are nomothetic in nature. When used in the context of a flexible (qualitative) design strategies, it is common for case study research to be inductive which leads to the generation of theory which emerges from the data.

Ethnography:

This tradition has deep roots within anthropological research (Geertz, 1973; Spradley, 1979), characterised by the ethnographer being deeply immersed within the system of interest and living among the people the researcher is observing. It relies on extensive and detailed field notes compiled from naturalistic observation – which leads to the common blurring of distinctions between participant observation and ethnography – and these notes are supplemented by field interviews and, where applicable, the collection of

documents. Ethnography in its strictest sense, also refers to a form of writing about the research process and its findings, whereas participant observation does not.

With the foregoing distinctions drawn, the present research uses a flexible research design, with a case study approach and the primary method of data collection is participant observation and facilitated action research meetings with the case study actors. These parameters are elaborated over the following pages.

The case study itself is of a funded five year community-based sustainability project located in the Leicestershire town of Market Harborough. More details of the case study project itself are forthcoming in the following chapter. All data pertaining to the present research are based on my work with the case study project, as discussed below.

3.3.1. The case study method:

While there are a number of reasons for selecting the case study method for research, of these, one of the most influential concerns the nature and scope of the research question itself. The effort to address the research question is better served through extended access to an exemplar of the area of interest to observe how, across a range of situations, actors test and learn about what works to elicit change in the direction of sustainability outcomes. Obtaining this quality of access to the domain of interest is congruent with the primary benefit of the case study approach, which is that it permits a researcher to extend the exploration of a complex and unique phenomenon as a detailed and idiographic study that may bring to light some of the features characterising the case of interest (Yin, 2009; Johnston, 2013; Thomas and Myers, 2015).

The current study explores how front-line CBS practitioners make sense of the operational theatre within which they are immersed and enact the

initiative itself, this is a phenomenon that has previously received limited research attention. The present research therefore falls into what Yin terms the 'revelatory' category (2009), characterised by inductive accounts of the phenomenon of interest. This is consistent with the case study method of evaluation, which seeks to “delineate and illuminate a program, not necessarily to guide its development or to assess and judge its merit and worth” (Stufflebeam and Shinkfield, 2007: 182). Since the purpose of the present research is to 'delineate and illuminate' the sense-making activities of CBS practitioners in monitoring and evaluating the impacts of the interventions the initiative deploys, adopting the case study method for such purposes is appropriate.

As Dunkley and Franklin (2017: 114) suggest, there is a need for “more in-depth qualitative project case studies to explore how communities negotiate the evaluation process”. This is because the focus of the present research concerns an under-researched area, and consequently, there is still much scope for inductive theory development. The case study method is well suited for inductive reasoning and the development of theory, primarily because this method has the potential to achieve “high conceptual validity”, involves “strong procedures for fostering new hypotheses”, provides an opportunity for close – and extended – observation of hypothesised causal mechanisms within the context of an individual case, which enables the observation and assessment of “causal complexity” (George and Bennett, 2004: 19).

In case study field work the researcher considers the specific features of the case with respect to both available theory and as a source for the generation and development of theory, in an iterative and reflective process. Yin (2009) refers to this process as 'analytic generalisation', and there appear to be striking parallels between this and a grounded theory approach to research and analysis (Glaser and Strauss, 1967). Grounded theory offers a method with which to explore meanings and processes in topic areas about which little is

known. As it proceeds by setting aside over-riding or formal theorising and values, thereby staying close to the accounts and meanings of actors involved (Payne, 2007), there is an evident symmetry in principle and practice with the epistemological framework within which the present research is undertaken which makes the general approach of grounded theory an attractive option.

While the present research design does not locate itself as a piece of grounded theoretical work, there have been a number of aspects of the approach incorporated into the development of the researcher's *ethos*. In common with all qualitative research, but with grounded theory and narrative analysis in particular given the perspective of this study, the utterances of study participants are treated as indicative of how they think, what they feel and believe, and how they understand and bring sense and meaning to the world (Glaser and Strauss, 1967; Hawker and Kerr, 2007; Payne, 2007). Once theory is generated, it becomes possible to identify points of convergence and divergence between theory developed from one case study and that developed from a second. However, it is here that the present research falls short of this ideal, because it restricts itself to a single case CBS initiative.

The use of the case study method here is therefore warranted, not only because of the convenience of and accessibility to the CBS project, but more critically because of the opportunity to spend an extended period of time with a single case. This is, from a research perspective, a rare opportunity. As Flyvbjerg argues in making the case for a social science based on *phronesis* (the pragmatic wisdom borne of interpretation validated by practical experience), extended case studies offer a rare and analytically unique field of research. They are an opportunity to study the minutiae generated from a focus on the daily activities of the case study actors, to view practices as events, contextualised and understood within the total system of relations (Flyvbjerg, 2001, 2006). Consequently, an extended, singular case study is the chance to take a longitudinal observational perspective. This permits the evolution of the

project team's thinking to be traced across a range of different circumstances, to observe how it is tested through the successive unfolding of events, and how – if at all – it is amended, updated, and used as a source of reflective learning.

3.3.2. Data acquisition methods:

Case studies lend themselves to a variety of data collection methodologies, but the specifics of which are selected for use are determined by the opportunities and constraints of the situation, as well as by the needs of the research goals.

3.3.2.1. Ethnographic participant observation:

In the present instance, because I also work with the CBS project team and other stakeholders supporting them in developing a monitoring and evaluation framework, there is extensive and unimpeded access to many of the day-to-day activities the team are involved in, and which occur in naturalistic settings.

Consequently, the primary data collection method used was ethnographic (Spradley, 1979), a field work method which involves the researcher becoming a participant observer of the phenomenon of interest (Geertz, 1973; Spradley, 1980). Doing so provides the researcher with the opportunity to observe the case CBS project team across multiple situations and contexts, both formal and informal, and in this way, the actors are observed under natural conditions as they go about their activities.

But this only tells part of the story. Participant Observation is less a research perspective or strategy than the dynamic balancing of the relationships the researcher engages in with the case study group of actors. The role of a participating and observing researcher oscillates along a continuum of participation (active with respect to the case study group) to observation

(passive with respect to the case study group). In Figure 3.1., below this continuum is described by the *y-axis* between “Researcher takes part in activities” and “Researcher observes”.

A participant is characterised by one participating – taking part in – the activity of research interest. In the case study of a CBS project discussed here, this would include activities such as contributing to realising public-facing festivals, the project’s M&E framework, and other goals that are commensurate with the objectives of the project. An observer, in contrast, is one who remains outside of the locus of the focal activity of the case study group, watching how the activity unfolds but minimising the degree of researcher influence on what is going on. In the case study situation given here, these would be characterised by attending and monitoring project or governance board meetings.

However, it is also widely acknowledged that the approach of participant-observer is also realised along a second bisecting continuum, between disclosure of one’s role and non-disclosure, which is expressed as the *x-axis* in Figure 3.1. Towards the left of the *x*-axis, the researcher reveals their role in relation to the observed group, and as a result, all actors interact with the knowledge that they are being observed by the researcher, even if the researcher fully participates in the focal activity. Towards the second pole, the right of the *x-axis*, the researcher limits what is known about their role, akin to covert or ‘deep cover’ police and military intelligence gathering. In the present research, no attempt was made to limit the disclosure of my role, with one exception which will be discussed shortly.

During the course of this research, my approach was to try to reconcile the focal activity and what I as the researcher wanted to learn from how the activity was undertaken by the case study actors. As will be discussed in the following chapters, I volunteered on behalf of the project to help set up stalls and related functional requirements instrumental to the project holding their

annual public-facing town centre festival. I also used the festival as an opportunity to conduct public intercept surveys which gathered data pursuant to some of the project outcomes and indicator framework and to get a sense of how the public had engaged with the agenda promoted by the project, and even the degree of public awareness the project had garnered over time.

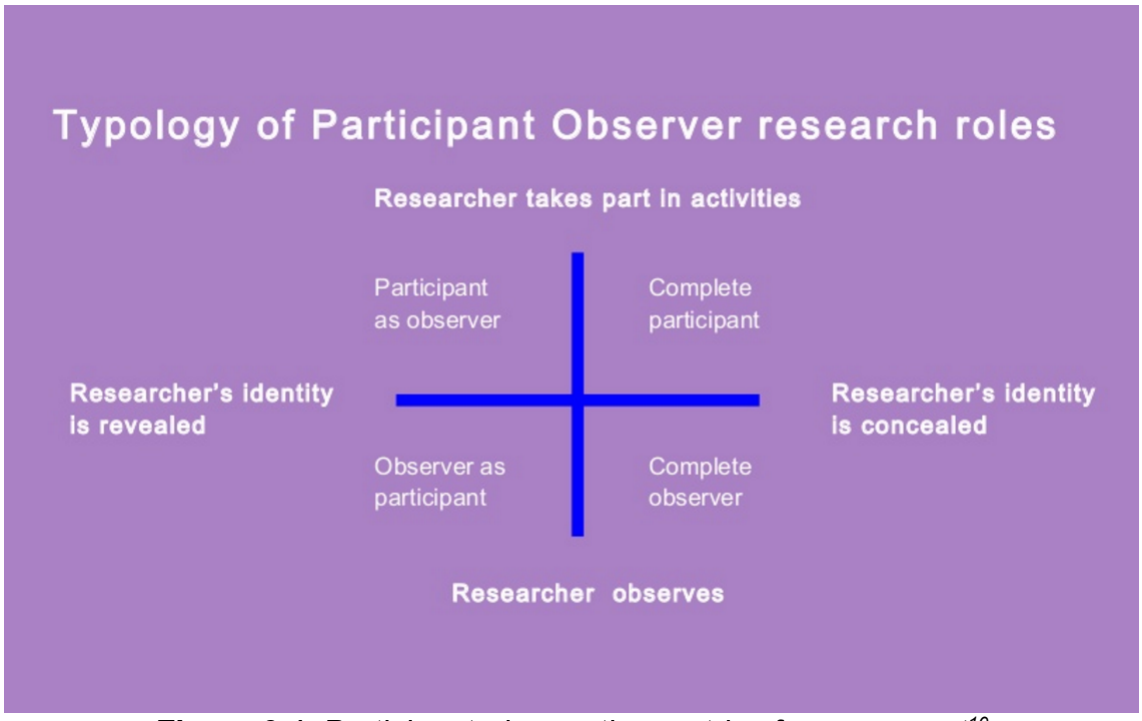


Figure 3.1. *Participant-observation matrix of engagement*[10]

At these times, I did not identify myself as an independent researcher to the public, and therefore, using the diagram in Figure 3.1., I was, from the perspective of the public, a complete participant. I was branded as such, required by the project to wear a high-visibility vest with the project's logo emblazoned on it. From the perspective of the team however, I remained an observer who was participating in the focal activity.

10 Source: https://www.slideshare.net/pearcen/cultural-anthropology Accessed May 11th, 2017

At other times, during project activity meetings and governance board meetings, I adopted more of an observer role. I overtly disclosed my identity as a researcher and expressed interest in how key issues of importance were raised, defined, and reconciled, the emergence of strategy and how decisions were made on the basis of data. All actors participating in the focal activity were aware that my role was to observe them in interaction.

Given the duration of my work with the case study project (~ 3 years), the present participant observational study is closer to the "classical anthropological model" Robson (2002: 314) describes. This offers key advantages however. After a while, actors became so used to me that I was seen as part of the group, which had benefits with respect to the use of a digital audio recorder, as discussed below. However, over time, it becomes increasingly implausible to claim any objective perspective, even when the notion of objectivity is itself problematic (see Chapter 6).

The benefit of participant observation is that it foregrounds a confluence between the perspective of the researcher and the scope of the research instrument. As will be taken up in great detail in Chapter 6, this overlaps considerably with second-order cybernetics, which elaborates an account of the observer as part of the system observed, that is, *an observing system*, rather than first order cybernetics which describe an observ*ed* system. This was a significant rationale for selecting this particular approach to data collection. Moreover, because it is flexible, the degree of closeness to the activity can be moderated by the researcher depending on the nature of the data one seeks to gather.

As suggested above, data acquired via participant-observation was sourced from a range of project activity meetings, including:

- CBS practitioner Partnership Board meetings

- practitioner Action Research meetings facilitated by the researcher
- occasional special purpose practitioner meetings
- theory of change (Weiss, 1995; Valters, 2014) workshop meetings
- practitioner and Partnership Board legacy planning meetings
- CBS initiative thematic meetings (e.g. food and energy)

These data are predominantly conversation-based in the form of naturally occurring language, which is entirely congruent with the focus of the present study. In order to capture this data in the most robust and accurate way available, the conversations to which this researcher was party were digitally audio recorded.

In every case, prior to beginning the recording, the participants were asked if they gave consent to the researcher recording their voices. Because the case study has already given its broad consent to participate in participant observation research, and in order to keep disruption to a minimum, formal written consent and participation forms were not sought, except in those instances when individual semi-structured interviews were conducted. Had any participant in one of these meetings requested that the recording be stopped in part or in whole, this request was complied with.

The conversational (verbal) data was supplemented by documentary evidence generated from the project, including historical artefacts dating to the origin of the funding application and partnership agreement. In addition to these non-interventionist approaches, data were also collected via semi-structured interviews and a focus group, which was used as opportunities to probe emergent themes and ideas in more depth.

3.3.2.2. Action Research/ Action Learning:

In addition to the role of supporting the CBS project team in the development of their M&E framework, I also facilitated a number of specialist meetings with the team, including theory of change workshops, legacy planning,

and business idea generation sessions, and quarterly team-based Action Research sessions. The latter was written into the funding application as a deliberate attempt to capture and invest learning into practitioner decision-making.

Action Research is a participatory process of reflective inquiry oriented to a plan or course of action the participants either intend to implement or have already undertaken, and because the focus is reflective and reflexive, it is becoming more widely adopted in managing projects under conditions of complexity (Flood, 2006; Rogers *et al.*, 2013).

This is a form of social research predicated on the assumption that participants "accumulate, organize, and use complex knowledge constantly in everyday life" (Greenwood and Levin, 1998: 4). More formally, it may be understood as "a form of research that generates knowledge claims for the express purpose of taking action to promote social change and social analysis" (Greenwood and Levin, 1998: 6). Social change refers here to increasing "the ability of the involved community or organization members to control their own destinies more effectively and to keep improving their capacity to do so" (Greenwood and Levin, 1998: 6).

At its heart, Action Research is an active process of extracting learning from experience, so that the learning can be incorporated into future planning efforts (see Figure 3.1., below). Blending systems theory and Action Research, Burns proposes that systemic action research "locates local action inquiry within a wider system taking into account both the effects that the system has on local issues, and vice versa" (Burns, 2010: 7). When these ideas are brought together, the focus of Action Research is to generate locally relevant knowledge about impacts and challenges of a given intervention. The link between the tenets and aims of Action Research and the research aim of this study are a rich source of data.

Figure 3.2. *Typical Action Research cycle*[11]

3.3.2.3. Semi-structured and focus group interviews

The third means of data collection involved semi-structured interviews with stakeholders and some members of the team, and a focus group session with the CBS project team only. These provided opportunities to probe some of the issues of research interest in greater depth and detail than would otherwise ordinarily be feasible. Relevant participant agreement and information forms are

11 Source: https://s-media-cache-ak0.pinimg.com/originals/f5/37/22/f53722ee7d458a3042d900618c768e4a.gif Accessed October 5th, 2016

appended in Appendix B and C, and two variations of semi-structured interview protocols are appended at Appendix D1 (Governance) and D2 (Project).

3.3.2.4. On-line public survey

The fourth source of structured data involved an on-line public survey to collect input from members of the public about their knowledge and awareness of the case study CBS and its work, and to explore respondents' understanding of the concepts of sustainability, resilience, and adaptation. This survey is discussed in detail in section 5.2.3.1., below. These data were collected to contextualise the work of the case study CBS initiative among those who might already be involved in some less formally constituted activities (e.g., via the local transition town chapter).

3.4. Handling and treatment of data:

The primary data in this research were audio recorded conversation. To render this format amenable to analysis, the audio recordings were transcribed. Transcribing audio recordings is a time and labour-intensive activity, so there were two options on how to proceed. The first was that the task could be out-sourced to a third party who would do the work for a fee. While this option would off-load the time burden from the researcher, there were several key disadvantages. These included: questions of confidentiality and ensuring that the data collected do not travel beyond the sphere to which the participants agreed; the necessity to read transcribed audio files in conjunction with listening to the recording to check for accuracy; and finally, not taking advantage of the opportunity to engage more closely with the primary data set.

The second option to handling audio files was to transcribe them personally. The disadvantage is the amount of time this takes – up to three hours of typing for every hour of recording, and this assumes a medium to fast typing speed and touch typing using equipment that lends itself to easily

pausing the recording and 'rewinding' the file[12] to double check words and to review accuracy. Despite this impediment, in addition to complying with data protection and management requirements, the advantage is that the researcher has an opportunity to become acquainted with the data in a qualitatively different way than at the time it was collected.

During the meetings while the conversations were going on in real time, and which were captured digitally by the recorder, the participant observer is attending to a number of other meta-vocal information, such as body language, facial expressions, and hand gestures, interactions among meeting participants, and the linking of emergent conversational content with themes from prior meetings, and so on.

By revisiting the raw verbal data in the form of recordings, the multiple nuances of speech and the verbal content can be attended to in ways that was not previously possible (Eisenhardt, 2002). It is likely that one will do so more attentively when transcribing the conversations than listening to an audio while error checking a transcript that someone else has produced. As a result, the researcher gains additional familiarity with small details and nuances, connections and omissions that may not have been noticed if the researcher is reviewing the data as an error-checker. In support of Flyvbjerg's observation that the "most interesting phenomena, and those of most general import, would be found in the most minute and most concrete of details" (Flyvbjerg, 2001: 145), transcriptions of hours of audio recorded conversations with the CBS project actors is a rich data set, comprised of both the minute and the most concrete of evidence. By personally transcribing the audio files, the researcher must attended to and be exposed (again) to this level of detail.

12 Using digital media, nothing is 'rewound' as such. However, a process that was appropriate for a cassette and reel-to-reel tape technology still seems intuitively correct way of describing the same function from the user's perspective, even if the technology itself has moved on. It is akin to referring to 'pages' in a word processor, when in actuality they are pixels on a computer screen, driven ultimately by complex logic gate binary code configurations.

In consideration of the relative advantages and disadvantages of each option, the audio recordings were transcribed directly rather than outsourced, and this enabled the continuity of data collection and analysis to be maintained (Rennie, 2012). To ameliorate the time-intensive nature of transcribing audio recordings, each audio file was listened to with reference to copies of the available minutes and field notes to locate the utterance in the overall 'linguistic map' of the meeting, and key points of discussion were transcribed. This reduced the time commitment for each transcription process.

3.5. Thematic Analysis:

The analytic method selected for this research is based on the Thematic Analytic approach (Braun and Clarke, 2006). This approach involves six phases, as briefly outlined below.

3.5.1. Familiarisation:

This first phase involves a researcher becoming immersed in the data through listening to and transcribing any audio recordings and reading the transcripts and documents. As the researcher reviews the materials, a set of initial codes are generated as potential pointers. These are preliminary and will likely be amended during successive readings as the researcher becomes more familiar with the nuances and flow of the data. However, these initial codes are the basis for highlighting those aspects of the data that address the research question.

3.5.2. Initial code generation:

The initial codes generated during the first phase of familiarisation will evolve over time through an inductive and iterative process. The data will be revisited and the appropriateness, or fit, of the codes will be tested for descriptive value and for the contribution to simplifying the data sets. The codes

are likely to be changed and the code dictionary added to and subtracted from as the researcher becomes more familiar with the data. The codes should strive to yield latent meanings, and not remain at superficial descriptive levels.

3.5.3. Thematic searching:

As noted previously, codes continue to evolve through iteration, and over time, the researcher will be looking for how some codes are related together in terms of themes. Bryman (2012: 580. Added emphases. Original formatting removed) defines a theme as understood in thematic analysis as:

> "a category identified by the analyst […] that relates to his/ her research focus (and quite possibly the research questions) [,] that builds on codes identified in transcripts […] and that provides the researcher *with the basis for a theoretical understanding* of [the] data".

Themes are quite difficult to define precisely, and Ryan and Bernard (2003) provide a brief history of the evolution and applications of the concept. They propose that "To us, themes are abstract (and often fuzzy) constructs that link not only expressions found in texts but also expressions found in images, sounds, and objects. You know you have found a theme when you can answer the question, What is this expression an example of?" (Ryan and Bernard, 2003: 87).

However, they conclude that out of the range of possible candidate descriptions indicating a theme, the most commonly used indicator is repetition, which establishes a pattern and is therefore the criterion that is the most reliable to denote a theme. Themes, then, are understood as repeated patterns of meaning that can be traced like narrative threads across the data. These might be explanations or perspectives, ideas, accounts of experience, and so on.

3.5.4. Theme review:

This is a process of testing the fit of the themes to the data being analysed. It involves identifying what supports or challenges the emerging theory that is based on the themes.

During this phase of Thematic Analysis, themes that were developed initially from the codes may need to be reworked in order to be more appropriately calibrated to the data, as this process concerns the validation of the themes (and the underlying codes) with respect to both the data and addressing the research question.

3.5.5. Identifying and defining themes and write up

This phase of the process involves identifying the key aspect of each of the themes so that the themes are presented succinctly and uniquely. This should be in the form of brief synopses about what the theme is, why it is relevant for the research question, and that a few illustrative examples of supporting evidence from the data are provided to substantiate it. Braun and Clarke (2006) also recommend that brief names are given to the themes in order to demonstrate what they are and their role in telling the story of the data.

The final phase of the process involves writing up the research report.

3.6. Validation of qualitative research:

Validation of qualitative research remains a contested topic (Bryman, 2012). This is primarily due to a tension between the respective epistemologies that underpin qualitative (interpretive phenomenology) and quantitative (positivist reductionistic) approaches to research. The primary criterion by which the latter approach is validated, how well findings correspond to an external and objective reality, is difficult to endorse in an approach that is predominantly

(social) constructivist (Berger and Luckmann, 1971). This latter perspective holds that

> "the assumption of an already stable and well-formed reality 'behind appearances', full of 'things' identifiable independent of language, must be replaced by that of a vague, only partially specified, unstable world, open to further specification as a result of human, communicative activity" (Shotter, 1993: 179).

Shotter's description of a processual and dynamic 'reality' is commensurate with what Maturana (1988b) describes as 'objectivity-in-parentheses', and coincides with current thinking in complexity science (e.g., Mitchell, 2009; Byrne and Callaghan, 2014; Clarke, 2014).

As a result of this diametrically opposing world-view, the usual methods by which research findings are validated predicated on positive empiricism and natural science no longer apply to research that traffics in the "vague, only partially specified, unstable world" described by Shotter. Qualitative research is less concerned about correspondence with truth claims about an external reality, because proponents of qualitative research would, more or less, argue that it is difficult to access such a reality without recourse to language, which is itself replete with meanings and interpretation.

This does not exonerate an anything-goes approach to qualitative research however. If anything, because the focus is on the vague and partially specified, the criteria for validating qualitative research may even be more stringent. Rather than seeking correspondence with 'external reality', validation of qualitative research tends to invest in acquiring strong internal validity. This seeks evidence of the degree of coherence between concepts and the account given of the researcher's observations (Miles and Huberman, 1994; Bryman, 2012).

The measures of interest are those that demonstrate an alignment between what is observed and the concepts generated to account for those observations. As a result of the typically protracted period of time involved in most participant observation research, the degree of correspondence is expected to be high. The validation involves testing the congruence of emergent theory with key segments of data and for the degree of fit with participants. Cases that are not explained by the theory are identified as limits to the theory (Eisenhardt, 2002; Lincoln and Guba, 2002).

However, validation is not the only criterion by which the quality and robustness of qualitative research can be assessed. Further validation of theory development is provided through triangulation (Foss and Ellefsen, 2002) which is the use of multiple sources of data to support a common argument. While not a panacea, triangulation does help ensure that there is a convergent theoretical validity, even when constrained by the epistemological limits to what can be known about the world (e.g. Rennie, 2012).

In addition to the use of internal validation and triangulation, Guba and Lincoln delineate a set of criteria by which qualitative research may be evaluated (Guba and Lincoln, 1994; Lincoln and Guba, 2002). These parameters incorporate measures of trustworthiness, which comprise credibility (as may be established through, for example, triangulation), the transferability and dependability of the findings, and the confirmability of the results. In addition, Guba and Lincoln propose the criterion of authenticity, which are the criteria of fairness, ontological, educative, catalytic, and tactical authenticity.

Finally, all research must account for the observer-effect on the field of study. These effects arise from multiple sites, both from the physical presence of the researcher as a participant engaged in observing the behaviour of actors, the content and tone of discussions at meetings, as well as through conditioning, even determining, the answers received through the type of

questions asked. Even the selection of topics to ask questions about may influence some respondents in their understanding and evaluation of their activities (de Shazer, 1980; Elkaïm, 1990; Doll *et al.*, 2008). Awareness of these observer effects is at the core of phenomenological analysis, which foregrounds the influence of the observer's perceptual (sense-making) structure on what is perceived. In keeping with the theoretical biology of Jacob von Uexküll in the early decades of the 20th Century, an organism only perceives the world it is structurally capable of encountering (von Uexküll, 1992; Rüting and Hamburg, 2001).

Like a dog whistle that is silent to human hearing ranges, the observer will be perceptually closed to processes that fall outside of their perceptual capacities. For the researcher whose only tool is a hammer, all questions and findings will resemble nails. Hence the researcher, in undertaking qualitative research, needs to remain flexible and sensitive, and engage in critical self-reflection about what is going on in the research domain. The above methods of validation outlined by Guba, Lincoln and others help steer the qualitative researcher towards cultivating that systematic reflexivity and unwillingness to take things for granted. This places a heavy emphasis on the qualitative researcher to be open, transparent, and accountable. In other words, to engage in ethical research.

3.7. Ethical considerations:

Because research is not a benign activity where the neutrality of the researcher, the methods employed, or of any impacts of findings can be assumed (Williams, 2008; Huvilla, 2011), the ethical implications and considerations of the research endeavour also need to be made explicit. The ethical considerations of working with human subjects and the congruent steps taken in light of these considerations are discussed, including the ethical positioning of participant observation as a method for collecting data.

This research involves human subjects who share of their experiences and who respond to formal and informal questions posed by the researcher. This involves varying degrees of trust on the part of the subjects who choose to take part, and warrants carefully considered responses from the researcher about how to handle both subjects and the data shared. This is, broadly, the concern of research ethics, and is the focus of this sub-section.

Researchers face two ethical concerns. The first is to ensure that the practice of research – the methods, the reasons why and the methods by which data are collected and analysed, and the concepts that are generated – is transparent, and rooted within a tradition that affords a clear accounting by the researcher for methodological decisions made under the circumstances of the study. The second concern is one more commonly associated with research, and that is about ensuring that human participants are informed about the research they give their consent to participate in, and their rights to withdraw and to expect anonymity.

The first of these aspects is provided above, and constitutes the majority of this chapter, if not its *raison d'etre*. What remains is to summarise the steps taken by this researcher to ensure that all participants in this study are informed about the focus of the research, consent to participate both directly and indirectly and be audio recorded, and are not deceived or duped.

All interviewees were asked to sign a consent form, were given a written outline of the research focus and its scope and notified that they were entitled to quit the research at any time. Interviewees were also assured of the confidentiality with which their responses and contributions will be treated in compliance with De Montfort University (DMU) and the British Psychological Society (BPS) ethical guidelines, and the UK Data Protection Act. The ethical approval form from DMU's Faculty of Technology is attached at Appendix A.

Additional forms, as noted in section 3.3.2.3., above, are also attached at Appendices B through D1 and D2, inclusively.

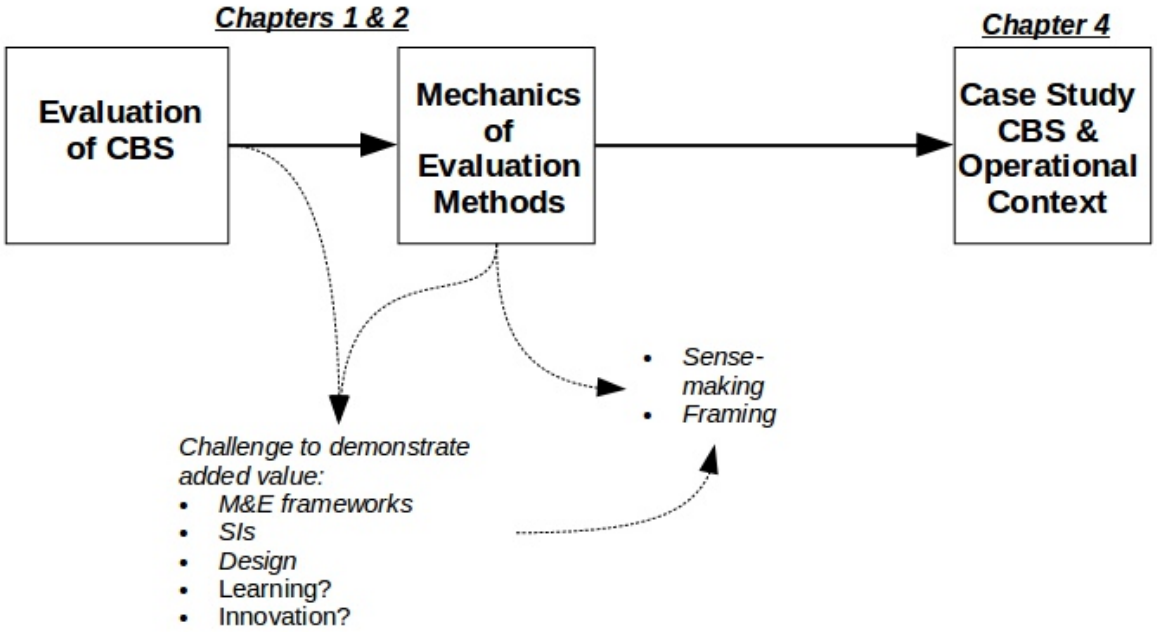
With respect to audio recording meetings however obtaining consent becomes more problematic tactically due to the potential disruption of meetings that are organised for reasons other than the researcher's study. This has already been briefly alluded to above. As noted at that juncture, a compromise was reached and while the meetings that were audio recorded cannot expect to be privileged or confidential, the researcher sought the verbal consent of the participants to be recorded at the commencement of each meeting prior to turning on the recording device. Should a meeting participant have requested that the audio recording be suspended, or that recording itself should cease, or that their contribution be deleted, then the requests will have been honoured accordingly. Transcripts were available for review by participants of the recorded meetings upon request. Unlike multi-participant meetings however, all semi-structured interviews required signed consent forms, as discussed.

3.8. Chapter synopsis:

This chapter deviates from previous chapters which have focused on the motivation for the research in terms of addressing a perceived gap in the literature. The present chapter has attended to the question of *how*, that is, the methodology by means of which the motivating research gap will be approached.

In the preceding pages, detail has been given concerning the approach adopted to collect and handle the data sets, how these data were thematically analysed and the rationale for selecting those methods. The proposed analytic methodology has been summarised, and the value of the extended single case study extolled.

While this chapter raised the issue of how the research results, based on qualitative methods, would be validated, and described how the ethical considerations of working with human subjects was to be managed, the next chapter introduces the case study upon which this research is based.



Key:

Main Chapter Themes

Reflective Sub-Text

4. CASE STUDY PROJECT AND ITS OPERATIONAL CONTEXT:

The case with which this study is concerned is introduced in this chapter. As the rich potential for research opportunities based on extended single case studies was elaborated on in sections 3.3.1. and 3.4. above, it need not be rehearsed here. However, what is important to reiterate is that such value is obtained as a result of exposure to minute day-to-day details the researcher enjoys. Because this detail occurs within the context of a funded community-based sustainability (CBS) initiative, the background, scope, and operations of this case initiative warrant introduction and discussion. However, because as noted previously, and as other research has already suggested (e.g., Murdoch, Marsden and Banks, 2000; Bull, Petts and Evans, 2010; Tàbara and Chabay, 2013), the context of a given project is of critical importance to the fortunes of that project. Taking this into account, the second part of this chapter also includes a detailed analysis of the operational context within which the case study CBS was deployed.

4.1. The Communities Living Sustainably fund:

While it is comparatively rare for community sustainability to receive core funding in the UK, one such funding programme was initiated in 2012 by Big Lottery, the philanthropic arm of the UK National Lottery, under the rubric of the Communities Living Sustainably (CLS) fund. The CLS fund seeks to foster community-scale adaptive capacity through a 'test-and-learn' approach which, over a period of up to five years, coordinates twelve England-based projects to evaluate what works to empower and support communities to live sustainably

and adaptively (Big Lottery Fund, 2012). The objectives of the funded projects were to:

> "include inter-related actions covering both mitigation activities, activities focussed on changing behaviours, and adaptation activities, activities that allow communities and individuals to cope better with the impact of climate change. Through this programme we want to establish widespread understanding between climate change and the issues of poverty, health, housing, security and well-being and influence those we fund, other funders and wider communities"[13]

A September 2012 press release for the fund summarised its ambition as "inspiring people to reap financial, environmental and health gains by adapting the way they live and work and connect together", with Fund Director Kanani stating that the objective was to "fire the imagination of local communities to think of creative ways to make sustainable living simple, easy and feel like second nature as well as being relevant to the most vulnerable to reduce their costs and improve their quality of life" (Big Lottery Fund, 2012).

Overall, each of the twelve successful project bids were considered to be 'test-and-learn' initiatives, to test what worked to help make communities more sustainable, and to communicate such learning via a Learning Partnership convened for this purpose. It is evident that the funders for the CLS projects were sensitive to the necessity to generate useful knowledge and to be able to share this as a contribution to meeting the broader needs of a society facing the challenges of adapting to multiple risks.

The aim of CLS is explicitly stated as to "learn how best to empower and support communities to live in a sustainable way and cope with the impact of climate change", and the twelve projects, although sited in different regional profiles across England (i.e., rural, urban, coastal, and semi-rural), with varying

13 https://www.biglotteryfund.org.uk/global-content/programmes/england/communities-living-sustainably Accessed April 3rd, 2016

operational scales, all share four outcomes in common: (http://www.communitieslivingsustainably.org.uk/about/aims):

1. "Communities will be better prepared for environmental challenges and longer term environmental change and understand the improvements they can make to live more sustainably.
2. Vulnerable people affected by the impacts of climate change will be able to make greener choices to help improve their quality of life.
3. Communities will maximise the use of their assets and resources to create new economic opportunities and live more sustainably by, for example, using the skills and knowledge of individuals within their community to create green social enterprises and jobs.
4. Communities will have a greater understanding of and more opportunities to use natural resources more efficiently"

Each project is further tasked with a series of specific indicators, supported by a suite of indicators against which progress from the projects is reported quarterly. CLS and its daughter projects are supported by a Learning Partnership, the role of which is to "[d]eliver support, advice and guidance to funded local communities [and] help them develop their projects effectively", as well as to

> "[s]upport local communities to gather learning from the development of their projects and share this learning with each other, with the BIG lottery and with the wider public" (http://www.communitieslivingsustainably.org.uk/about/aims).

In sum, the objective of the CLS fund is to "make sustainable living simple, [...] as well as being relevant to the most vulnerable to reduce their costs and improve their quality of life".[14]

14 Kanani, Big Lottery Fund England Director, in the press release of the fund's announcement, September 3rd, 2012. On-line http://www.communitieslivingsustainably.org.uk/news/12m-lifeline-for-vulnerable-facing-fuel-and-food-poverty Accessed December 17th, 2013.

The rationale motivating the CLS fund is explicitly to explore what works to promote sustainable communities, with individual projects afforded reasonable latitude to engage in quasi-experimental approaches as part of the organising 'test-and-learn' ethos. Because the ethos of experimentation and learning are core values of the fund, and may be seen as the central motif underpinning the *raison d'etre* of the fund and each of the twelve projects, taking the fund's emphasis on learning and evaluating what works as its starting point, the present research focus on exploring the generation of learning through monitoring and evaluating project activities within the context of a test-and-learn CBS initiative seems both appropriate and warranted.

4.2. The Sustainable Harborough Challenge Project:

As noted above, the CLS fund is explicitly concerned with learning and the generation and sharing of knowledge about what works to promote social sustainability and adaptation. The case studied for this research, the Sustainable Harborough Challenge Project (SHP) is one of these twelve CLS projects.

4.2.1. A brief history of the SHP:

Located in the south eastern Leicestershire market town of Market Harborough, SHP was one of two CLS projects that started off 'cold', with few established and viable community organisations available to help facilitate the development of the project. One of the few extant organisations was the local chapter of the transition town network, the Transition Town Market Harborough[15] (TTMH).

15 The website for TTMH or Transition Harborough is at http://www.transitionharborough.org.uk Accessed July 11, 2016

While TTMH cannot claim to represent a significant sector of Market Harborough, numbering as it does perhaps 13 members in total, it nevertheless does occupy a critical part in the eventual success of the CLS funding application bid. The TTMH dates back to about 2007, arising from the demise of the local Friends of the Earth branch. In 2011, the TTMH group responded to an expression of interest from BIG and submitted a bid[16] to develop the full application for the CLS fund. This was one of two such bids from Leicestershire, the second originating from Earl Shilton/ Barwell.

The expression of interest from East Shilton/ Barwell was rejected, while that from Market Harborough was selected to go to the next round of working up a full funding application. That the East Shilton/ Barwell expression was rejected was a cause of some surprise, as noted in the RCC (Rural Community Council – Leicestershire and Rutland) Director's Report to the Board of Trustees on September 12th, 2012. This was because the community of East Shilton/ Barwell is an area characterised by deprived neighbourhoods, while Market Harborough is comparatively affluent. This surprise was shared by members of the TTMH who had put the expression of interest together.

The Market Harborough invitation to bid was one of 30 applicants across England, and each application received a £10,000 bid development grant and was required to work with an established charitable organisation to be considered for the next round of funding. In looking for a suitable charity to work with, despite some historical tensions, the TTMH approached RCC as the only viable option according to a representative of the TTMH involved in the process.

The relationship between the TTMH and RCC continued to be tense. From the perspective of the TTMH, the RCC

> "almost like pushed TTMH to one side and took over the whole thing. From being the main players and inviting the RCC to

16 The scoping bid was submitted in November 2011 by a working group drawn primarily from the TTMH.

> come in with us, it became the RCC being the main players and TTMH was kind of sidelined" (TTMH representative, semi-structured interview, 2016-04-26).

This perception of being sidelined and disenfranchised led ultimately to a blog post[17] being written by Rob Hopkins, founder of the transition town network, following a conversation with members of the TTMH about their experiences in the funding bid process. In this blog post, the TTMH described themselves as feeling on the outside looking in on project ideas they had come up with, and were now excluded from.

From the perspective of the RCC however, the TTMH were marginalised as a result of their "ideas and objectives" that were "considered quite unrealistic and rather fanciful" (RCC Director's Report to Board of Trustees, 2012-09-12). This perspective is endorsed by one of the principle architects of the final bid in a facilitated Action Research meeting with the SH Project team, that while what was required were developed business plans "I didn't get back business plans, I got back visions" (Participant, Action Research meeting, 2014-04-02). In other words, despite having the initial ambition to identify and seize upon the opportunity to pursue funding, when it came down to the detailed work of developing a fully costed proposal, it was the RCC's broad sense that there was a requisite skills deficit among the TTMH to be able to carry this work forward at the level that was required to secure funding.

4.2.2. Evidence and the definition of project outcomes:

The deadline for final applications for funding was June 25th, 2012. On June 12th, 2012 a survey[18] was undertaken among residents and workers within Market Harborough, attracting 134 responses (approximately 0.59% of the

17 Available at https://transitionnetwork.org/news-and-blog/a-cautionary-tale-when-funding-goes-bad/ Accessed October 27th, 2016

18 This survey is considered in greater detail under Section 5.5. below, and is introduced here in order to establish the primary context within which the project application was developed.

town's population). Details concerning how this survey was advertised are not known. Five primary themes were explored through this survey:

- Local food
- Energy and water
- Jobs, skills, volunteering and local economy
- Your ideas for Market Harborough
- Finding out more

The survey findings helped inform the detail of what were subsequently identified as key outcomes for the project. Consequently, the following summaries of the survey results are useful to locate the development of outcomes and indicators. These refer to food; energy and water and jobs, skills, and volunteering, respectively. Beginning with public support around food-related activities (Table 4.1., below):

Parameter	Response
Buy more local produce	87.5%
Interest in growing own food	66.4%
Constraints to growing own food	Time and space
Planting free/ subsidised cost fruit tree	74%
Gardening advice	57%
Garden sharing scheme/ land share	33%
Support for thriving (indoor) market	92%
Support for a food hub to facilitate buying local food	91.5%
Sharing private surplus fruit harvest with those most in need	90%

Table 4.1. *Consultation survey responses: Food*

Of the respondents to this consultation survey, most appeared to be in favour of an indoor market as well as a hub through which to buy locally produced food. The least amount of support seems to be around the idea of a land-share or community garden.

From the responses to support for energy-related activities, a majority report less interest in energy efficiency primarily because they already have these measures installed. Most are also not interested in investing in community owned energy supplies, although a majority do endorse energy efficiency in buildings. Most respondents seem interested in water saving and rainwater harvesting opportunities (see Table 4.2., below).

Parameter	Response
Loft insulation – not applicable/ already installed	88%
Cavity wall insulation – not applicable/ already installed	84%
Solid wall insulation – not applicable/ already installed	68%
Micro-technologies – interested	51%
Water saving devices – interested	47%
Rainwater collection – interested	63%
Constraints	Cost and practical issues
Investment in local community installations – interested	38.3%
Seeing technologies in action	66%
Encouraging energy efficiency in buildings	88%

Table 4.2. *Consultation survey responses: Energy and water*

In response to jobs, skills, and local economy parameters, 64% expressed an interest in the idea of a local currency (e.g., a Harborough Pound), while few expressed an interest in attending training in rural skills (e.g. woodland management or market gardening). However, 74.8% of respondents did express an interest in visiting an eco-hub located in the town centre to learn about forthcoming events and activities, or to obtain free advice about how to live sustainably in Market Harborough.

Drawing the results of this consultation process together, one is left with an impression that the (responding) public are interested in a thriving indoor

market that supplies locally sourced food, and for any surplus of which to be provided to those most in need. The responding public also endorses improved energy efficiency in buildings, seeing relevant technology in action, and in learning how to harvest rainwater, and in having a centrally located “eco-hub” from which they can learn about upcoming events and gain information. Most respondents to this survey do not seem to be interested in enhancing the energy efficiency of their own homes, nor are they interested in investing in community-owned energy schemes or community agriculture.

When reconciling the findings from the public survey with the proposed outcomes and supporting indicators that went into the final funding application, the specific measures identified through surveys are translated into more abstract outcomes adopted by the project as determinants of successful impact. In the former, what is identified as being of importance are a centrally located ‘eco-hub’, an indoor market that supplies locally sourced food, advice on how to save rainwater, and an opportunity to see alternative energy technologies in action. In the latter, there are a number of outcomes attached to improving knowledge and skills, facilitating behaviour change, increasing local resilience, establishing local enterprises, preserving biodiversity, and the dissemination of knowledge. The question therefore concerns the degree to which, using the terminology of social movements research, there is an alignment between the diagnostic and prognostic frames, indicating agreement about what constitutes the nature of the problem pertinent to Market Harborough.

It is to be anticipated that if the findings from the survey are incorporated into developing the outcomes that inform the final project funding application, then the application itself would be emphasising the facilitation of local food provisioning, public opportunities to see energy efficient technology in use, rainwater harvesting opportunities, and a centralised resource for the public to visit and obtain information from. Yet, there is an apparent mismatch between the findings from the survey and what was proposed in the final bid application.

Table 4.3., below, shows the project outcomes as per the final, and accepted, funding bid application:

Outcomes	Indicators
1) Improve knowledge and skills on sustainable living amongst the local community, and increase public support and participation in activities to improve local sustainability	1a: Number of people participating as volunteers, etc. 1b: Number of people reporting improved knowledge/ skills
2) Bring about practical action and behaviour change to reduce the environmental impact and carbon emissions of local households, businesses and schools	2a: Reduction in CO2 emissions due to energy use in MH 2b: Reduction in CO2 emissions per yr due to project 2c: Number of interventions carried out by households 2d: Number of interventions carried out by businesses 2e: Number of interventions carried out by schools
3) Increase the resilience of the local community to environmental change, through increased community use of local natural resources and assistance for vulnerable people to manage changes in the local environment and increasing food and fuel costs.	3a: Economic value of local natural resources used per year in MH (+5 mile radius) 3b: Number of vulnerable individuals and households with reduced food and fuel costs
4) Establish local enterprises that harness local resources and increase local trade to sustain and develop the local economy.	4a: Increased value of local trade due to project 4b: Number of new community enterprises
5) Preserve and improve biodiversity throughout the community, including public and private spaces and the River Welland.	5a: Increase in number of bees counted on buzzing borders
6) Improve and disseminate knowledge across UK communities on how to improve sustainability in an average-sized UK market town, targeting Market Towns in particular	6a: Number of people from other communities reached via dissemination activities 6b: Number of public reports produced describing learning from project

Table 4.3. *Original table of outcomes as per the funding bid application*

The degree to which these survey results were incorporated into the project proposal is unknown. There is little clear read across between the findings and the proposal data, so while it is feasible that the results were known at the time of the application, because the results were circulated on or around June 12th, 2012 and the due date was for June 25th 2012, but it may have been too late to reference these if the proposal had already been developed. This account seems to be supported by the time line. In the "Review of Outcomes and Indicators", dated June 7th, 2012 (author unknown), the six outcomes that were in the final proposal are already posited, albeit in an underdeveloped state. It is likely therefore that as there had already been an investment of work in these outcomes and indicators, and due to a pressing timeline, the evidence from the survey was overlooked. Unfortunately, no further documentation from the pre-funding developmental phase of this project is available, so it is not possible to determine what, if any, account of the survey findings was given by the proposal developers.

4.2.3. Governance and accountability:

The project is managed by a broad partnership, with the Rural Community Council Leicestershire and Rutland (RCC) as the senior and accountable partner. The senior partner organisation, the RCC, was founded in 1924, and is one of 38 RCCs that comprise the Rural Community Action Network. It identifies its aims and objectives as the intent to "deliver projects and provide advice and support to rural communities and through outreach work provide intelligence gathering to Government agencies (currently Defra)" (RCC, 2012: 9).

The additional partner organisations signed the agreement on the 20th and 21st December, 2012, and include Seven Locks Housing association (SLHA), Transition Town Market Harborough (TTMH), Action for Market Towns (AMT), Leicestershire County Council (LCC), Harborough District Council (HDC), De Montfort University (DMU), Severn Trent Water (STW), and Welland

Rivers Trust (WRT). Several additional agencies (e.g., the Environment Agency and Western Power Distribution) were also involved at a partner level, but over time, a number of these partner organisations have ceased to participate in the operations of the project.

The Sustainable Harborough Challenge is described as a:

> "programme of activities designed to encourage behaviour change, significantly improve the environmental sustainability and resilience to climate change of Market Harborough, especially for vulnerable members of the community and to capture learning from our experience that will be disseminated through a number of mechanisms for the benefit of other Market Towns across the Country" (RCC, 2012: 3)[19]

The governance arrangements for the partnership stipulate the formation of a Stakeholder Steering Group (later referred to as a Partnership Board) to meet quarterly in order to make decisions on "the projects to implement and any changes in direction" (RCC, 2012: 8). According to the Partnership Agreement between the RCC and Project Partners, (BIG Lottery Fund, 2012: 6),

> "Monitoring is the routine collection of information that will help us[20] to answer questions to the Lottery about the progress and outcomes of the project. We will expect you to monitor the progress towards your outcomes and we will ask you to complete and return to us twice yearly monitoring reports from the start of the programme".

As per this agreement, all "partners are expected to attend partnership meetings" (BIG Lottery Fund, 2012: 4), although in practice there has been no enforcement of this, and the non-compliance by Severn Trent Water, River Welland Trust, and latterly Seven Locks Housing Association and Leicestershire

19 Hereafter referred to as the "Delivery Plan".

20 The specification of who "us" and "we" is in this context ambiguous. This designation is not defined, and the collective personal pronoun ("we", "us") seems to be fluid in the context of the documentation. At times, it suggests the RCC, but also the BIG Lottery when the RCC is referred to in the third person. In the Big Lottery Standard terms and conditions for Communities Living Sustainably, this is defined as "the organization receiving the grant bound by these terms and conditions (RCC)" (Partnership Agreement, n.d.: 19).

County Council has been overlooked. The prevailing belief is that the Partnership Agreement lacks any legal standing, and consequently, the degree of commitment of each of the signatory agencies is not called into question. As detailed in the Partnership Agreement (undated) document, any "partner in breach may have their membership suspended" which, if left unresolved, may result in the member being "asked to leave" (BIG Lottery Fund, 2012: 7). However, this option has yet to be actioned.

Under the terms of the Partnership Guiding Principles in the Partnership Agreement (BIG Lottery Fund, 2012: 8-9), the service provided by the partnership is thought to be improved with reference to the following principles: Openness and transparency, sharing good and best practice, commitment to high standards and continuous quality improvement, a commitment to operate sound business practices, commitment to flexibility, and a commitment to abide by publicity protocols.

The Partnership Board was envisaged to act as a stakeholder steering group to:

> "Monitor progress against delivery of activities and achievement of outcomes"; "Identify learning from delivery of the project"; "Agree changes to the project plan in the light of the learning from the project to date"; and,
> "Recommend any suggested changes in the programme to the management team" (RCC, 2012: 45).

4.2.4. Implementing the funded project:

The project proposal was awarded just under £1 million grant funding for the period from January 2013 to December 2017, inclusive. In addition to the lead partner, the RCC, seven additional partners were officiated in the Partnership Agreement, signed by all partners on and around December 20th,

2012. The TTMH announced the launch in their December 2012 blog post[21] and the Project Manager was recruited to start in January 2013.

According to the Delivery Plan, the outcomes of the project are listed as follows:

> "The Market Harborough Community will be better prepared for environmental challenges and longer term environmental change and understand the improvements they can make to live more sustainably.
> Vulnerable people affected by the impacts of climate change will be more knowledgeable and will have a range of opportunities to enable them to make greener choices to help improve their quality of life.
> The Community will maximise the use of its assets and considerable resources to create new economic opportunities and enable all sections of society to live more sustainably.
> The Community will have a greater understanding of the challenges of the changing environment in which they live and will be provided with more opportunities to use natural resources more efficiently" (RCC, 2012: 3-4).

These outcomes were designed to meet six "core needs" identified as "knowledge, skills, support and participation"; "Environmental impact"; "Resilience and self-reliance"; "Local economy"; "Biodiversity"; and "Monitoring and knowledge sharing" (RCC, 2012: 29-30). The emphasis at the heart of the CLS fund for the projects to be opportunities to be 'test-and-learn' strategies for sustainable living is reflected in the SH Project proposal, and reflects the aspiration among researchers that such strategies might become experiments that could be scaled up (Seyfang and Smith, 2007).

In the Delivery Plan, the process of monitoring performance against the indicators contained in Appendix E of the Plan was to be by means of two primary activities. The first of these was the State of the Town report which was to be

21 Available at: http://www.transitionharborough.org.uk/?p=114 Accessed: June 11, 2016

> "produced twice during the lifetime of the project [and] will document progress on key indicators of sustainability (e.g. energy use, carbon emissions, no. local businesses) and provide a model for an evaluation tool that can be used more widely by other UK communities" (RCC, 2012: 43).

The second means of monitoring performance was identified as Action Research which was anticipated to "be a part of the learning within the project and will not only monitor progress against set criteria but will provide a learning opportunity for partners" (RCC, 2012: 63).

These two processes would be supplemented by the expectation that project officers would monitor their own work, and data for collection were to be modelled on milestones and checked at the quarterly Board meetings and Action Research meetings.

In addition to these monitoring processes, two independent evaluations of the project were written into the Plan by the RCC, one a formative evaluation at the mid-term and the second a summative evaluation at the end of the project. The focus of these external evaluations was to document "the outcomes of activities, […] the sustainability of market [sic] Harborough as a whole, and [use] this evidence to generate and disseminate knowledge on how to improve sustainability in an average-sized UK market town". This was to be driven by two main questions for evaluation, viz. "How has the Sustainable Harborough Challenge contributed to improving sustainability in Market Harborough?" and "How can sustainability be most effectively improved through local partnership working in an average UK market town?" (RCC, 2012: 65).

Finally, it should be noted that the SHP, and the parent BIG Lottery CLS fund are relatively unique. Few CBS initiatives are funded for periods up to five years, and the SHP is not portrayed here as exemplifying a 'typical' CBS initiative. However, it is also difficult to determine what would constitute a 'typical' initiative, given the range of governance, funding, and resource

arrangements that support such activities, as discussed in Chapters One and Two.

4.3. Operational context: A profile of Market Harborough:

The purpose of this section is to provide an overview of the social and physical characteristics of the location within which the Sustainable Harborough Project (SHP) is based. The SHP is based in Market Harborough, a "quintessential English market town" (Rose Regeneration, 2015: 2), located on the southern border of Leicestershire and Northamptonshire.

As a community-based sustainability (CBS) initiative, the social and physical character of the community within which SHP operates poses particular opportunities and challenges. This is to say that the setting, or operational domain, of a project impinges on the developmental trajectory of a project while the project reciprocally influences the community itself.

To provide an introduction to the character and nature of the town, this chapter begins with a brief historical account for how the town came to be established as a trading hub in the late 12th Century, mid-point between the medieval centres of Leicester and Northampton, at one day's travel from either centre. As a trading point, the town's offer is characterised by its hospitality in terms of food and accommodation, and as will be shown, this is one of the main activities that the SHP is seeking to revitalise in modern day Market Harborough.

Following the historical context, the physical and ecological characteristics of the area are summarised. As will be shown, these physical features tend to limit the extent to which vegetables and fruit are grown in and around the area, contributing to the development of livestock farming.

The third section considers the demographic profile of the town, drawing on secondary data sets from the Office of National Statistics, and what was formerly DECC (Department of Energy and Climate Change). In addition to people, the profile of the town's housing is briefly considered, and this is especially pertinent given that (domestic) energy efficiency is the second of the two main activities the SHP focuses on.

Data drawn from three independent consultations and surveys of the town's inhabitants are reviewed. These sources are the Communities Living Sustainably (CLS) survey conducted in June 2012 prior to the submission of the formal bid (see Chapter 4 for details), the Community-Led Planning consultation undertaken by the Rural Communities Council – Leicestershire and Rutland (RCC) in 2014, and the commissioned State of the Town report conducted by Rose Regeneration (2015), which looked at the town and nearest neighbour comparators with specific reference to the so-called Egan Wheel (Office of the Deputy Prime Minister [ODPM], 2004) of sustainability measures.

4.3.1. A brief history of Market Harborough

This section gives a brief account of the history of Market Harborough from its roots as a medieval trading hub deliberately established at approximately one day's travel from Leicester to Northampton (see Figure 4.1.).

Prior to the second half of King Henry II's reign, there is no evidence that Market Harborough existed. At the time of the Domesday Book in 1086, what is today Market Harborough was no more than a field belonging to the royal manor of Great Bowden, itself established two or three hundred years previously, with a name meaning 'the hill where oats grew' (*haefera beorg*) (Hoskins, 1957: 57). In the space of 100 years however, a market town appeared in this location paying aid to the Crown at an amount nearly that of the more considerably established manor of Great Bowden.

Figure 4.1. Aerial photograph of Market Harborough c.2007
Source: Harborough District Council (2007)

Although no charter for the foundation of the town exists, Hoskins (1957) argues that Harborough was created within a short period of time, probably sometime between 1160 to 1176,[22] and cites an entry in the 1176-77 Pipe Roll

22 This is also the view taken by Hartley who proposes it was founded in the second half of the 12th century, and who also agrees that Market Harborough was established primarily as a trading point (see Hartley "Market Harborough: In the beginning" http://www.marketharborough.com/pages/The_history_of_market_harborough_in_the_beginning.html Last accessed: January 17, 2014).

for seven marks as an aid from *Hauerberga* – a derivative from the old term *haefera beorg* – an amount comparable to that contributed by Great Bowden, indicative of a place of comparable size. The rapid emergence of the town can be accounted for first, by its location as the mid-way point of approximately fifteen miles between the medieval cities of Leicester to the north west and Northampton to the south, a distance that would be the equivalent to one day's travel for a large party during that period.

A second reason suggesting the sudden appearance of the town may be accounted for by its deliberate design as a market town. Similar to other contemporary purpose-built market towns, such as St Albans and Watford, Harborough has the distinctive medieval market town plan of a V-shape main street, along which are positioned the important buildings, such as the church and market hall, and traditionally the market itself would have been held in the widest space between the houses on either side of the street. This claim is bolstered by further evidence concerning the church and the market.

First, the St Dionysius church, of which the earliest parts have been dated to the early 13th century,[23] has no churchyard suggesting its status as a chapel dependent on the Great Bowden mother-church at which local people would have been buried. Second, in 1203 the township paid three marks to the exchequer for the right to hold a market. This was originally held on a Tuesday, a tradition maintained until at least 1957 (the year Hoskins published his history of Harborough), but has subsequently been sub-divided into a farmers market on the first and third Thursday of the month, a general market held daily from Tuesday to Saturday, a vintage market on Wednesday, and a Sunday antiques and collectibles market.[24]

23 https://www.historicengland.org.uk/listing/the-list/list-entry/1074439 (Last accessed March 20, 2016)

24 http://www.harborough.gov.uk/market (Last accessed March 20, 2016).

Of interest from Hoskin's account is, first, that the town of Harborough is associated with grains grown on the hillside west of Great Bowden, suggesting that in the southern facing draining area, at least one variety of grain was sufficiently established to earn the area recognition to be referred to as the hill that grew oats. The agricultural potential of the area is a capacity that has endured, albeit the grain has now seemingly given way to feed grass lands for livestock. A second point of interest is the establishment of Harborough as a market town from the start. Few towns in England from that period can claim to be purpose built, and given the rapid rise in its relative fortunes judging by its contributions recorded in the Pipe Roll, it evidently nurtured a good trade as a market, which might be due to the third point of interest, its location as a half-way point between Northampton and Leicester.

According to an article published by the Harborough Historical Society, there is a dearth of information available about either Harborough or the more established Royal Manor of Great Bowden in the period between the Domesday Book of 1086 and notes collected at the parish church from about 1220 to the 1500s (Brown, 2000). From available taxation data, the initial growth of Harborough seemingly stagnates by the middle of the 13th century (Hoskins, 1957) and Harborough, like so much of England, was also subject to the epidemic of bubonic plague which contributed to economic stagnation and widespread impoverishment. In fact, the location of Harborough as a thoroughfare town was a mixed blessing, for this not only contributed to its wealth but also to the endemic rates of infection from diseases carried in by travellers from the rest of England and London in particular. For example, during the smallpox outbreaks of the 18th Century, Harborough records a birth rate that, unlike the other Leicestershire towns not on main thoroughfares, exceeds the mortality rate for only eleven of the 65 years between 1711 and 1776 (Gräf, 1994). Taken together, these converging influences might account for the period Brown observes as being relatively sparse for information.

However, it may be that Harborough, like other small towns around England, was elided for a second reason several hundred years later following the Industrial Revolution which “lost their function for the first industrial nation and therefore vanished from the collective consciousness” (Gräf, 1994: 98). Although its economy was predicated on farming, the county of Leicestershire also included significant industrialisation. While Harborough was well known as a centre for clock and watchmaking from the 1730s, this was later adversely affected by the industrialisation of competition, leaving it to rely strongly on its second most significant source of trade as a benefactor of being the only small town in Leicestershire to be located on a turnpike road in 1722. This location enabled it to capitalise on its well-established history as a thoroughfare town and a proliferation of innkeepers (Gräf, 1994).

By the end of the 17th century, although Harborough was beginning to specialise in agriculture, especially in dairy and stock farming, important sources of wealth also came from the non-agricultural sector. In fact, the town evidenced below six per cent of its employment in the agricultural sector and was becoming the target for more wealthy migrants according to settlement papers which listed the occupations of the migrants, and was now specialising in industrial and commercial opportunities (Gräf, 1994). When the market hall was demolished in 1737, it contained 32 butcher's stalls, and the town had acquired a reputation for sheep markets and horse fairs. The hospitality trade also became more significant alongside the continued traffic for through travel and for the markets and fairs and was well known since at least 1637 for its high proportion of inns and traders (Gräf, 1994). As a coaching town, even though it remained small throughout the 18th century, its range of retail shops was wide, and it is likely that this trade continued to profit due to its opportune location along one of the principal roads in England.

By the end of the 18th century, there were already plenty of middle-class households in Harborough, and 23% of the population were employed as

professionals, traders, or as innkeepers, many of whom employed domestic servants (Gräf, 1994). The 18th century for Harborough is described as one of "quiet prosperity" and cloth weaving was a significant industry,[25] even though by the time of the first census in 1801, it only had a population of 1,700. By 1901 however, the population had increased rapidly to over 7,700 which might be attributable, at least in part, to the completion of a canal connecting Harborough with the Birmingham and London navigation ways, the 1857 opening of the railway line between Harborough and London, the 1833 gasification of the town and the 1890 piped water supply. In 1895 Market Harborough became the seat for the district council.

Hoskins ends his chapter on Market Harborough on an upbeat note, perhaps worth considering as indicative of the town's long history and demonstrable resilience, when he writes "it is clear that Harborough's supremacy in south-eastern Leicestershire goes back to the middle decades of the fourteenth century and from that time onwards it did not cease to flourish, reaching the height of its prosperity in the centuries between the days of Elizabeth and the coming of the railway in 1850" (Hoskins, 1957: 68). His use of the term 'flourish' has especial significance here and will be reconsidered later in connection with the discussion about the meaning of sustainability as a process of 'flourishing' as this is understood by Ehrenfeld (Ehrenfeld, 2008; Ehrenfeld and Hoffman, 2013).

The modern expanse and position of Market Harborough, surrounded by smaller villages, is given in the aerial photograph in Figure 5.1., above, which shows the original manor of Great Bowden to the north, now a village that has become engulfed by the town over the years.

25 Lambert "A brief history of Market Harborough, Leicestershire" http://www.localhistories.org/harborough.html Last accessed March 20, 2016

4.3.2. The ecology of Market Harborough:

The town of Market Harborough is located within the Welland Valley bordering the Laughton Hills and High Leicestershire to the north. It is a flat, shallow but wide river valley of the Jurassic Middle Lias geology grouping,[26] lined with arable pastures along its sides and with little in the way of tree cover.[27] What trees do exist are concentrated around the water courses and along the disused railway line to the north of the valley, and tend towards the more common species of ash (*Fraxinus* sp.), oak (*Quercus* sp.), field maple (*Acer campestre)* and some willows (*Salix* sp.) in small groups towards the east (Harborough District Council, 2007).

The Welland Valley floodplain is predominantly flat, and this contributes significantly to its long heritage of agricultural land use, which has been its historical mainstay, supplemented by its location as a trading centre and stop over point on the medieval roads connecting Northampton and Leicester.

In early 2012, one of the original partners to the Sustainable Harborough Challenge Project, the Welland Rivers Trust (WRT), coordinated refurbishment works of the River Welland under the project title of "Welland for People and Wildlife". The project restored 1.8km of the River Welland and the shorter River Jordan tributary, which joins the Welland in the centre of Market Harborough at Little Bowden, and in early 2014 at the Market Harborough point along the river, sought to address "the unsympathetic flood alleviation works which were carried out in the 1970s [and] to remove barriers to fish migration and improve community value without compromising flood defence".[28] The Welland River,

26 Estimates are that the Lias lithostratigraphic grouping was formed between 200 to 180 million years ago, and consists predominantly of limestone (i.e., calcareous), shale, and clays.

27 As a characteristic of the geology, this likely accounts for the common knowledge that the area is only good for growing grass. That the place on which Harborough is now sited was itself once referred to as the hill on which oats grew supports this traditional knowledge and constrains the range of local foods that can be grown here.

28 Project summary. Case study: Welland for People and Wildlife Project. https://restorerivers.eu/wiki/index.php?title=Case_study%3AWelland_for_People_and_Wildlife_Project Last accessed May 11, 2015.

rising about six miles west of Market Harborough near the village of Sibbertoft and joining the wash at Fosdyke some 62 miles to the east, has had some historic importance for the area, particularly in terms of its live stock trade destined for the London markets in the 19th and early 20th centuries.[29]

4.4. Market Harborough – A statistical profile:

The preceding sections have provided an historical and ecological profile of Market Harborough. This overview traced how the geology of the soil, together with its location within a river valley, give Harborough its agricultural heritage, reflected by its old name meaning a hill upon which oats grew. This was then supplemented by its founding in the late 12th Century as a trade and half-way point between the medieval cities of Northampton and Leicester.

Its location as a thoroughfare town meant that its fortunes ebbed and flowed subject to the vagaries of migrants importing trade, along with the unanticipated influx of periodic pestilence. However, the corresponding growth in commerce from inn-keepers and traders in sheep and cattle seemingly kept the town going while other contemporary villages faded in relevance over the centuries.

With the benefit of an extended historical perspective of some 800 years, an impression of Harborough is given of a quietly resilient town, reasonably well off, and with a relatively high percentage of middle class land owners enjoying the benefits of proliferating main transport links with London and the rest of the country.

The total area for the town is 1,978 hectares with an average density of 12.1 persons per hectare. With reference to, primarily, the census 2011 data set

29 The Welland Basin, Welland River Trust. http://www.wellandriverstrust.org.uk/index.php/thewellandbasin/ Last accessed March 21, 2016

for the 14 LSOA (Lowest Super Output Area) geographic segments that make up Market Harborough,[30] the Neighbourhood statistics[31] for 20 parameters were investigated and analysed to compile a composite statistical sketch of the town as a social-physical space in time.

This section brings this historical perspective up to date, and using publicly available data sets, provides current statistics on the town's population demographics, against parameters given in Table 4.4., below:

Code:	Data Set:	Parameter:
QS402EW	Accommodation Type – Households, 2011	Classifies households by the accommodation type of the household
NA	Benefits Data – Working Age Client Group	Counts of benefit claimants of working age categorised by the main reason for interacting with the benefit system
QS416EW	Car or Van Availability, 2011	Classifies households by the number of cars or vans available to members of the household
QS415EW	Central Heating, 2011	Classifies occupied household spaces by the types of central heating present
QS601EW	Economic Activity, 2011	Classifies usual residents aged 16 to 74 by economic activity
QS118EW	Families with Dependent Children, 2011	Classifies families in households by the number and age of dependent children
QS302EW	General Health, 2011	Classifies usual residents by general health
QS501EW	Highest Level of Qualification, 2011	Highest level of qualification of usual residents aged 16 and over
QS604EW	Hours Worked, 2011	Classifies usual residents by the number of hours worked
QS406EW	Household Size, 2011	Classifies occupied household spaces by household size
QS605EW	Industry, 2011	Information about the industry of usual residents aged 16 to 74 in employment in the week before the Census
NA	Key Figures for Physical Environment	Covers variables for land vacancies, air quality, area of road, domestic and non-domestic buildings, gardens, and greenspace

30 The 14 LSOAs are Market Harborough North, Centre, North West, South, East & Welland Industrial Estate, Coventry Road area, Lubenham Hill, Farndon, Welland Park, the Leisure Centre, Great Bowden, and Little Bowden South, East and West. The LSOA codes are E01025794 through to E01025807.

31 These were accessed via the ONS Neighbourhood Statistics portal http://bit.ly/1XKJrnC at various times throughout 2014 and 2015, and verified during January 2016, and compiled during February and March 2016.

QS303EW	Long-Term Health Problem or Disability, 2011	Information about the long-term health problems or disabilities of usual residents
QS701EW	Method of Travel to Work, 2011	Information that classifies usual residents aged 16 to 74 by their method of travel to work
QS407EW	Number of Rooms, 2011	Classifies occupied household spaces by the number of rooms
KS608EW	Occupation, 2011	Provides information about the occupation, by minor group, of usual residents aged 16 to 74 in employment the week before the Census
QS102EW	Population Density, 2011	Information about the population density of areas
QS301EW	Provision of Unpaid Care, 2011	Classifies usual residents who provide unpaid care by the number of hours of care provided
QS405EW	Tenure – Households, 2011	Classifies households by tenure
QS612EW	Year Last Worked, 2011	Classifies usual residents aged 16 to 74 by the year that they last worked

Table 4.4. Neighbourhood statistics compiled for Market Harborough (Source: ONS)

In addition to these 20 parameters, electricity and gas consumption data for 2012 (the date when funding for the SHP was applied for) through to the latest release in 2014 and the data for fuel poverty from 2011 through 2013 as produced by the Department of Energy and Climate Change (DECC) were also collected.

4.4.1. Population:

Market Harborough has the population demographic character of a family-oriented town given the high percentage of mid-to-late 40 year olds resident in the area. At the time of the last census in 2011, Market Harborough has a population[32] of 23,995, and the population of mid-to-late 40 year olds comprise about 6.73% of the population, with a second peak in the late sixties

32 ONS LSOA mid-2014 SAPE17DT1 data set, for the following LSOareas: Market Harborough North; Centre; East & Welland Industrial Estate; Coventry Road; North West; Lubenham Hill; South; Farndon; Welland Park; and Leisure Centre; Great Bowden; and Little Bowden South, East and West.

age bracket. The age profile of the population is shown graphically in Figure 4.2., below.

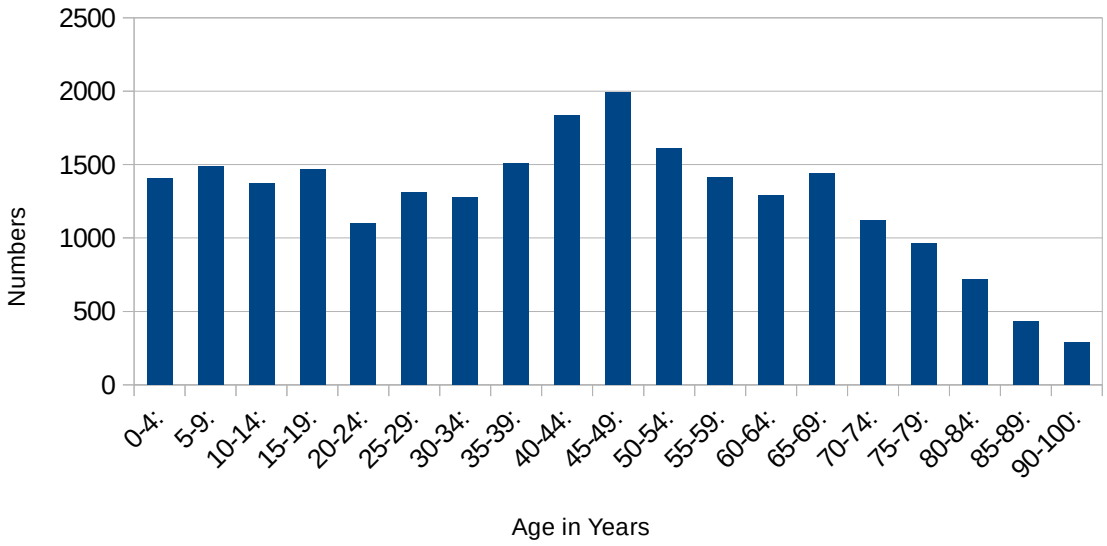


Figure 4.2. *Population of Market Harborough by age group*
Source: ONS mid-2014 SAPE17DT1

4.4.2. Housing:

This section provides an overview of ONS data relevant to the profile of the residential dwellings. Approximately 36% of all homes are owned out right in Market Harborough compared to 32.77% in the East Midlands, and 30.57% for the UK as a whole. While the percentage of home ownership in Harborough is high, the percentage of social rented housing in Harborough at 10.21% is lower than, again, both the East Midlands region which is 15.85% and the UK as a whole which is at 17.69% of all households. Overall then, Market Harborough has a high ownership and low social rental residential profile.

Figure 4.3. below, illustrates the type of dwellings in Market Harborough by percentage of total dwellings (n = 9,823). As can be seen, the majority are detached and semi-detached property types, with less than a quarter of all dwellings being terraced housing.

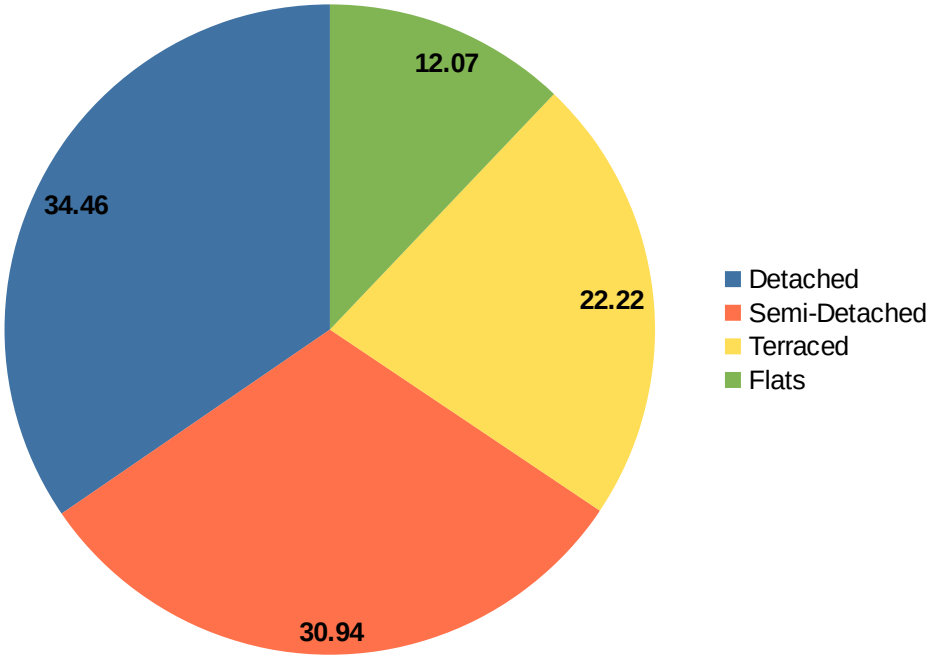


Figure 4.3. *Residential dwelling property types in Market Harborough. Excludes temporary dwellings, therefore total does not equal 100%*

Of the range of architectural types for residential dwellings in Market Harborough, ten predominate, and these are profiled by LSOA in Table 4.5., below. As can be seen from the Table, LSOA E01025804 (Market Harborough South) has the most dwellings overall, while E01025803 and E01025807 (Lubenham Hill and the Leisure Centre, respectively) have the least. E01025800 (Little Bowden West) is the area with the most flats (typically 1 or 2 bedroom), while E01025807 (Leisure Centre) has the most terraced housing.

Table 4.5. *Residential architecture profile in Market Harborough, by LSOA*

	E01025795	E01025794	E01025802	E01025796	E01025798	E01025800	E01025801	E01025799	E01025803	E01025805	E01025806	E01025807	E01025804	
Bungalow 1-2 bed(s)	160	30	50	100	110	10	40	0	20	100	90	10	250	970
Bungalow 3 or more beds	40	30	90	0	30	10	0	0	10	90	10	10	170	490
Flat 1-2 bed(s)	180	30	80	160	200	250	140	0	0	50	130	40	80	1340
Flat 3 or more beds	10	0	10	0	20	0	0	0	0	0	0	0	10	50
Terraced House 1-2 bed(s)	90	50	70	70	70	60	140	40	10	30	70	160	20	880
Terraced House 3 or more beds	100	90	50	70	110	50	210	40	20	90	140	260	190	1420
Semi-detached 1-2 bed(s)	30	10	50	110	50	50	10	10	20	10	10	10	10	380
Semi-detached 3 or more beds	150	80	150	320	120	60	30	30	160	190	230	60	80	1660
Detached 1-2 bed(s)	0	0	0	0	10	0	0	0	10	0	0	0	0	20
Detached 3 or more bed	110	410	140	60	160	210	10	590	320	140	10	20	120	2300
Unknown property type	20	0	0	10	10	0	10	0	0	50	0	0	0	100
Total	**890**	**730**	**690**	**900**	**890**	**700**	**590**	**710**	**570**	**750**	**690**	**570**	**930**	9610

Finally, the most number of semi-detached houses are found in E01025796 (MH East) while the highest prevalence of detached houses are in E01025799 (Little Bowden East), both of which are to the north of the town, just south of Great Bowden, a Royal Manor and origin for Market Harborough (see Table 4.5., above).

4.4.3. Households:

The second cluster of ONS data describes the composition and profile of households. In this cluster, parameters concerning vehicle ownership, number of dependent children and household size and energy-related information is summarised.

40.17% of all households (n = 3,946) do not have any dependent children, while a total of 28.59% of households have at least one dependent child (n = 2,808) under the age of 18. Of those households who do have at least one dependent child, the majority had either one or two dependent children.

In terms of household size (that is, the number of persons living within the dwelling), most households had one or two residents, with the majority being two person households (36.36%, n = 3,572) followed by single occupant dwellings (29.86%, n = 2,933). Households with three and four occupants were quite evenly matched at 14.32% (n = 1,407) and 14.16% (1,391) respectively. Households with five or more occupants are few (4.02%, n = 395 for households with five occupants).

Of those households with vehicles (81.4%, n = 7,996), the majority (54.03%) are one car households (n = 4,320), followed by two car households (37.16%, n = 2,971). Comparatively few have three or more vehicles.

In terms of fuel consumption, the data from DECC suggests that 2013 was an anomalous year in terms of low electricity usage which, in 2014 has risen above the 2012 levels, as shown in Figure 4.4. below.

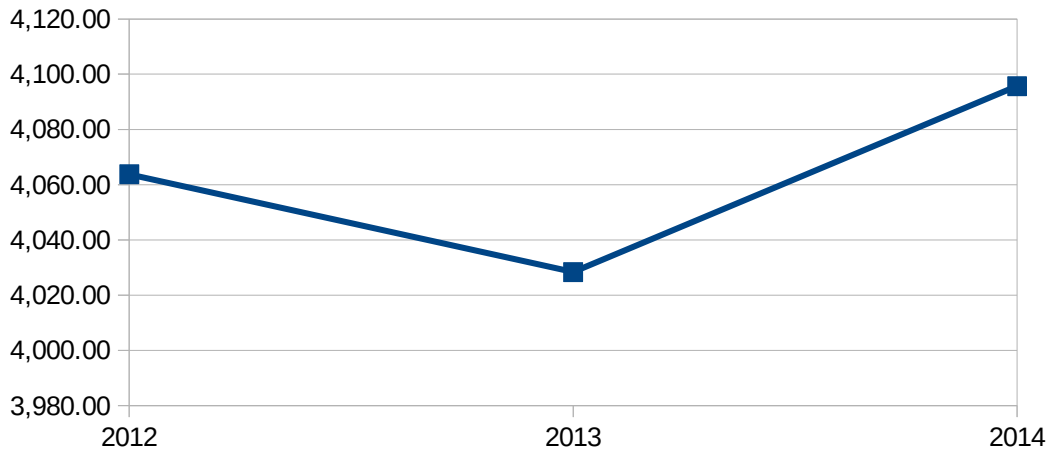


Figure 4.4. *Electricity usage (in kWh) from 2012 to 2014 inclusive. No degree day correction.*

When electricity usage is compared with gas usage for the same period, the usage profile changes, as shown in Figure 4.5. below:

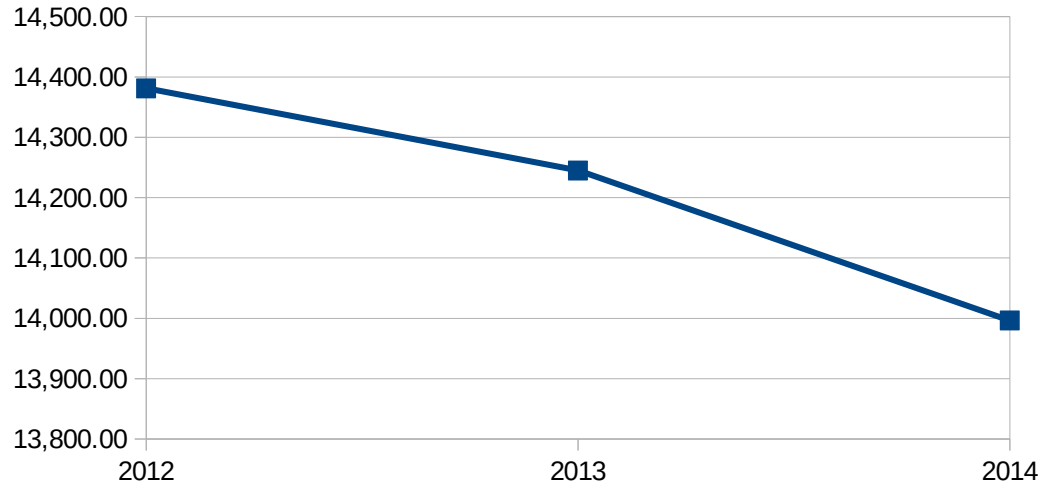


Figure 4.5. *Gas usage (in kWh) from 2012 to 2014 inclusive. Includes degree day correction.*

As most households in Market Harborough have gas central heating (86.79%, n = 8,525), the decline in gas usage might be attributable to the increase in global temperature, with 2014 being recognised in 2015 as the warmest year on record since 1910.[33] Whether or not this is the source the sharp decline in use is of course difficult to ascertain, but may be one factor that seems to offer a plausible account.

Finally, relative fuel poverty from the years 2011 to 2013 inclusive show a decline in the percentage of households affected. In the three most affected LSOAs, the Leisure Centre, Welland, and Coventry Road areas have each shown a decrease over this period. In 2011, the Leisure Centre area reported 18.8% of households were classified as fuel poor which, by 2013 had declined to 13.9%, while the Welland are, over the same period fell from 15.3% in 2011 to 11.4% in 2013, while the percentage of fuel poor households in the Coventry Road area also fell from 15.3% in 2011 to 12.2% in 2013.

4.4.4. People:

The data sets concerning the people living in Market Harborough concern a different set of parameters. For this profile, data on health, employment, and benefit claims are the focus. The total population of working age adults was calculated as those from 18 to 65 years of age inclusive, which returns a potential working age population of 14,138 (58.92%). Of these, 8.17% (n = 1,155) claim one or more types of benefit, the most frequently claimed being incapacity which accounts for 41.99% (n = 485) of all benefits claimed.

Overall, the population of Market Harborough tend to report high levels of very good and good health, as shown in Figure 4.6. below:

33 See http://www.metoffice.gov.uk/news/releases/archive/2015/Record-UK-temps-2014 (Last accessed April 3, 2016).

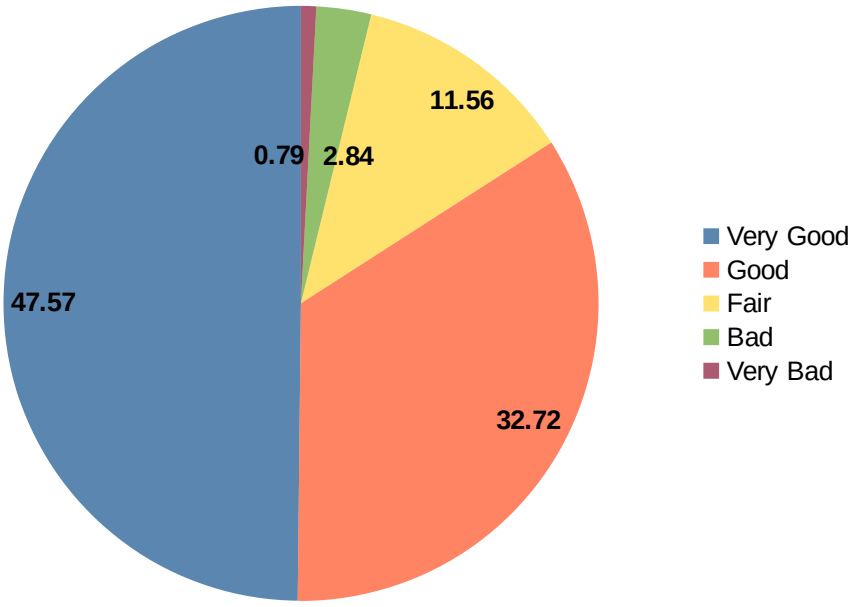


Figure 4.6. *Reported health of Market Harborough population as percentage of total population. Source ONS (2011). Does not equal 100%*

In terms of employment data, 11,240 Census poll respondents reported working, 26.89% (n = 3,022) on a part-time basis. Of the work force, 14.8% (n = 1,664) report being self-employed, of these 32.45% (n = 540) on a part-time basis. Finally, of those who are self-employed, regardless of full or part-time, 74.04% (n = 1,232) also provide employment for others.

The top four employment sectors for the work force is summarised in Table 4.6. below:

Sector	n	% of total
Retail	2,193	18.90%
Education	1,281	11.04%
Social Work	1,204	10.38%
Manufacturing	1,190	10.26%

Table 4.6. *Highest employment sector (N = 11,602). Source ONS (2011)*

4.4.5. Businesses:

In the modern period, the flow of traffic that once characterised the profile of Harborough in the latter 17th century is now two way, with mainline railways connecting about 700 daily commuters with London-based employment. But, overall, the majority (53%) of the labour force is inward bound to Harborough. In the town centre business area, which is approximately 208 m^2, there are about 4,700 VAT registered businesses, with a higher than national average of smaller employers, and an average weekly footfall of some 50,000.[34]

Two challenges that the town faces are an absence of high-speed broadband connectivity, which tends to affect the sale of houses, while the town centre itself faces the challenge of absentee landlords who can be invited to attend strategic planning meetings and participate in activities, such as energy efficiency retrofit and refurbishments.

However, Harborough's history as a thoroughfare town may again be a key to its future resilience. It enjoys good transportation network proximity, and lends itself to the diffusion of skills and knowledge for innovations.

4.5. Communities Living Sustainably Survey – 2012:

As discussed in section 4.2.2. above, this survey was administered by the RCC in both paper and electronic formats in an effort to gather some data on what "people who live and work in Harborough […] would like to see happen to make the area more sustainable and feedback on some of our ideas for the project" (CLS Survey, 2012: Introductory comments).

The survey comprised 16 questions, clustered in five themes: local food; energy and water; jobs, skills, volunteering and local economy; your ideas for

34 L. Byrne, Harborough District Council Business Support Manager, "Viable Rural Communities and Economies – Through the Lens of the Market Town", Rural Services Network conference, Market Harborough, August 19, 2015.

Market Harborough; and finding out more. The survey attracted 134 responses (or 0.56% of the population of Market Harborough). It is a combination of Likert-scale (1 to 5) questions, where 1 is “Not interested” and 5 is “Interested”, and open-text responses. The findings discussed in detail in section 4.2.2., above are summarised below.

Section 1: Local Food

Not Interested (Likert-scale 1 & 2)	Interested (Likert-scale 4 & 5)
Attending classes on how to grow or preserve food	Planting a fruit tree or bush in your garden if subsidised or provided free
Availability of an allotment space	Bulk-buying scheme for lower priced organic or local food
Gardening advice from a local expert	Public services (e.g. schools, hospitals) purchasing more local food
Help with heavy gardening work	Keep market in Market Hall
Loan of equipment	Setting up a food hub to facilitate buying from local producers and farms
Planting and looking after a community orchard	Sharing surplus harvest with those in need
Taking part in a garden sharing scheme	
Working in a community garden	

Table 4.7. *Degree of interest among respondents to planned local food options Source (CLS Survey, 2012)*

Despite the apparent lack of interest among respondents in actually doing the work themselves, there was nevertheless still consistent interest in the prospect of having locally produced food available for purchase and ensuring it was put to use in local services.

However, 66.4% of respondents did express an interest in growing their own food more than they do at the time of the survey, and 56.4% expressed interest in preserving own food more than they do at present, even though these interests are not reflected in the Likert-scale responses in Table 4.7.,

above. Consistent with the general trend in Table 4.7., 87.5% of respondents did express an interest in being able to buy more locally grown produce. The most commonly cited constraints to growing and preserving one's own food were time and space, while cost was commonly cited as the reason for not buying more locally grown produce.

The second theme the CLS Survey inquired after concerned energy and water. This section of the survey is structured in three ways. The first concerns energy and water saving technologies, and asks for respondents to identify if the technology is already installed, whether they are interested or not interested in installing the technology, or whether it is not applicable (due to rentals, architecture of the dwelling, etc.).

The next part of this section invites open text in terms of constraints to take action, and the third is again a 5 point Likert-scale to capture relative interest with respect to activities planned to be part of the then-forthcoming SHP. The responses to the first and third part of the energy and water section of the survey are represented below.

Section 2: Energy and Water

Parameter	Response (%)	% Not Applicable
Loft insulation	Installed already (82.3%)	6.2%
Cavity wall insulation	Installed already (55.8%)	28.7%
Solid wall insulation	Installed already (19.8%)	43.7%
Micro-generation (e.g. PV, wood-burner)	Interested (51.2%)	9.9%
Water-saving devices	Interested (47.6%)	5.7%
Rainwater collection/ re-use	Interested (63.2%)	4.8%

Table 4.8. *Interest in installing efficiency technologies*
Source (CLS Survey, 2012)

Common reasons cited for *not* installing energy and water efficiency technologies were cost (especially initial outlay), knowledge and practical or infrastructural issues, such as roof has inappropriate aspect, or respondent didn't have authority to install technology.

Not Interested (Likert-scale 1 & 2)	Interested (Likert-scale 4 & 5)
Buying shares to invest in community-owned renewable energy installations	Advice on how to save energy and water[35]
	Free home visits to offer advice on energy savings
	Visiting a home with eco-features installed to see technologies in action
	Encouraging energy efficiency in all buildings

Table 4.9. *Degree of interest in planned activities for the SHP*
Source (CLS Survey, 2012)

When compared to the local food options, more respondents seemed to be interested in engaging in ways of using energy and water more efficiently.

The third section of the CLS Survey explored how respondents rated their interest on the proposed ideas for promoting jobs, improving skills and supporting the local economy. The same 5 point Likert-scale was used. The responses are given below.

35 This was quite evenly split between those who rated their interest on 1 or 2 (Not interested) n = 46 and those who rated 4 or 5 (Interested) n = 48. 32 rated 3 (Neutral).

Section 3: Jobs, Skills, Volunteering & Local Economy:

Not Interested (Likert-scale 1 & 2)	Interested (Likert-scale 4 & 5)
Attending training on Rural Skills	Using a local currency (e.g. Harborough Pound)[36]
Sharing your skills and knowledge as a 'community champion' for energy/ water/ local food	Visiting an 'eco-hub' in the town centre to learn about upcoming events and get free advice[37]
Working for a community enterprise to promote sustainable resource use	
Volunteering opportunities to help with elements of the project	

Table 4.10. *Degree of interest in plans for promoting jobs and local economy*
Source (CLS Survey, 2012)

Respondents did not express interest in almost all of the options on offer. Two exceptions were in the local currency and in a town centre-based "eco hub" to offer free advice and to learn about upcoming events.

The penultimate section of the CLS Survey is given over to free text responses to capture respondents ideas for making Market Harborough more sustainable. The majority of responses concern decisions and interventions that are better directed towards local government and the district council, and are beyond the scope of what SHP could meaningfully influence, e.g., housing developments and transportation policies.

By considering the summary tables (Tables 4.7. through 4.10.) above, the following profile can be generated of respondents to the ideas proposed by the project. As summarised in Table 4.11., below, a pattern emerges between those activities and ideas that respondents are not interested in and those that they are. The activities and ideas that do not attract interest are predominantly

36 This was quite evenly split, with 47 respondents rating either 1 or 2 (Not Interested) and 49 rating 4 or 5 (Interested), and 35 rating 3 (Neutral).

37 Out of all of the options that respondents rated 4 or 5 (Interested), this was the option that attracted the most interest (n = 59).

those that require a personal time investment, such as attending classes (for food preserving and growing, or rural skills training) or sharing skills and knowledge, nor working in a community garden or volunteering.

Not Interested (Likert-scale 1 & 2)	Interested (Likert-scale 4 & 5)
Attending classes on how to grow or preserve food	Planting a fruit tree or bush in your garden if subsidised or provided free
Availability of an allotment space	Bulk-buying scheme for lower priced organic or local food
Gardening advice from a local expert	Public services (e.g. schools, hospitals) purchasing more local food
Help with heavy gardening work	Keep market in Market Hall
Loan of equipment	Setting up a food hub to facilitate buying from local producers and farms
Planting and looking after a community orchard	Sharing surplus harvest with those in need
Taking part in a garden sharing scheme	Advice on how to save energy and water
Working in a community garden	Free home visits to offer advice on energy savings
Buying shares to invest in community-owned renewable energy installations	Visiting a home with eco-features installed to see technologies in action
Attending training on Rural Skills	Encouraging energy efficiency in all buildings
Sharing your skills and knowledge as a 'community champion' for energy/ water/ local food	Using a local currency (e.g. Harborough Pound)
Working for a community enterprise to promote sustainable resource use	Visiting an 'eco-hub' in the town centre to learn about upcoming events and get free advice
Volunteering opportunities to help with elements of the project	

Table 4.11. *Summary of degree of interest to ideas proposed for SHP Source (CLS Survey, 2012)*

There is also a lack of interest in investing financially in a local community-owned energy offer, although this may also be due to a lack of appreciation about returns on investment and risks involved.

Finally, of the 57.3% of respondents (n = 67) who agreed to be kept informed about the project and opportunities to become involved, only 32.8% (n = 22) stated that they would be interested/ willing to volunteer to help on the project. A significant number of the respondents (n = 50) were not interested/ declined to be kept informed about the project.

However, this does not suggest that the respondents are not interested in issues that are supportive of sustainability in general. There is support (expressed as interest) for local food initiatives, both in terms of purchasing availability and their use in public services (e.g., hospitals, care homes, and schools), as well as learning more about energy and water efficiency, including visiting demonstration projects and accessing free advice.

From the foregoing survey responses, although 0.5% of the population of Market Harborough responded, there is some evidence to suggest that activities that are oriented towards the respondents' areas of interest are more likely to garner support than those which ask residents to volunteer and to invest time in engagement activities.

4.6. Market Harborough Community Led Planning Survey – 2014:

The second piece of commissioned survey research was undertaken by the Rural Community Council – Leicestershire and Rutland (RCC), the senior partner of the SHP. The administration of this survey represented the first time that this instrument had been used on a scale larger than that of a village

setting. This survey was undertaken to "engage and consult the community in relation to key SH projects, enable them to identify issues, opportunities and concerns, and where appropriate to help inform project development and implementation work" (CLP – Revised Project Plan 2014/15, Paper 4, SHP Partnership Board meeting, 2014-09-10).

The Survey was administered during March 2014 in the Welland Ward of Market Harborough, the most deprived ward[38] in the Harborough District with a national deprivation rank of 11,662. The ward represents just under a quarter of all Market Harborough residents at approximately 5,500 people. A total of 153 people responded to the survey, representing ~2.78% of the area's residents. The survey is comprised of six questions, with three questions seeking respondent profile information. Of the 146 respondents who gave their age, 57.5% (n = 84) were 55 or older, and of the 143 respondents who specified their gender, most (60%, n = 86) were female.

The questions probe what the Welland Ward residents identify as the three best and the three worst things are about living in Market Harborough, ask for respondents to rate on a 4 point Likert-scale (1 being unimportant and 4 being important) several factors in terms of their inclusion in the Community Action Plan for Market Harborough[39], and polled respondents for other issues or topics to be included in the Plan. The survey concludes with a question asking respondents about their degree of interest in becoming involved in the SHP activities and/ or the development of the Community Action Plan, and finally whether respondents would be interested in joining in to help create the Plan or would like further information.

38 From http://www.leics.gov.uk/harboroughweb_ch5_deprivation.pdf Indices of multiple deprivation valid for 2001 Census.

39 It is not clear from the available documentation for this survey the degree to which the local Harborough District Council (HDC) was in support of, or endorsed any of the activities undertaken pursuant to this survey. Consequently, while the survey may have collected input from the Welland Ward residents, what – if any – bearing this input might have on subsequent HDC planning cannot be established.

To these latter questions seeking to poll respondents' interest in becoming involved, it is interesting to see the level of interest expressed in light of the findings from the CLS Survey discussed in section 4.6. The lowest register of interest (n = 14, 9.2%) among respondents was in either helping to create the Community Action Plan or becoming involved in community energy projects (although the latter was not defined or specified what becoming involved would entail).

The highest level of interest (n = 19, 12.4%) was in response to the prospect of attending meetings and events to discuss local concerns, while a lower response (n = 11, 7.2%) was attracted by the similar question concerning interest in joining a local group to help create the Plan. Clearly, respondents were more interested in discussing the local issues than they were in creating a Plan to address any issues raised. In fact, only 22.2% (n = 34) expressed interest in follow up information regarding the development of the Plan.

Of the three main areas of focus activities undertaken by the SHP, helping to improve the local environment was relatively popular, attracting 11.8% (n = 18) of the responses indicating interest, and finding out more about energy and water efficiency came a close second (11.1%, n = 17), whereas being involved in local food projects was of relatively low (7.8%, n = 12) interest among respondents.

The things that respondents thought were the best aspects of living in Market Harborough were shopping and local businesses (69.3%, n = 106), particularly the independent retailers, restaurants and small businesses, the vibrant town centre, access to supermarkets and the Market Hall. Facilities and services, such as the medical facilities, schools, leisure and refuse and recycling facilities, were rated the lowest (22.9%, n = 35).

The three worst aspects about living in Market Harborough were almost 92.2% (n = 141) unanimously thought to be traffic and transport, while issues about community integration with minority groups rated as one of the highest at 15.7% (n = 24).

When asked to rate the relative importance of eleven topic areas for inclusion in the Community Action Plan, on a 4 point Likert-scale, crime and community safety was ranked as the most important (average rating 3.59), open spaces and the environment were rated as third most important[40] (average rating 3.44), energy and water efficiency was rated as seventh most important (average rating, 3.20), and local food projects were rated as the least important (average rating 2.47).

To conclude, most of the areas of concern for respondents from the Welland Ward are beyond the scope of the SHP's capacity to influence, and those that are within the SHP's scope broadly registered low interest from the residents surveyed.

4.7. State of the Town report – 2015:

The third and final commissioned research undertaken to poll the opinions of Market Harborough residents was outsourced to an independent consultancy organisation, Rose Regeneration. This was a piece of work that had been written into the funding application and although originally envisaged to be carried out by a founder member partnership organisation, due to a repeated failure to progress this work by that organisation, the project was put out to tender.

40 This is possibly due to the concern respondents expressed about the amount of development going on in Market Harborough and the encroachment on greenfield sites.

The objective of the tender was to generate a State of the Town[41] report on behalf of the Sustainable Harborough Project to "identify the town's strengths as well as any areas for improvement"[42] with respect to a number of broad sustainability parameters, as per the 2005 Bristol Accord[43], which, in turn, is based on the so-called "Egan Wheel" assessment tool (Office of the Deputy Prime Minister [ODPM], 2004), see Figure 4.7., below.

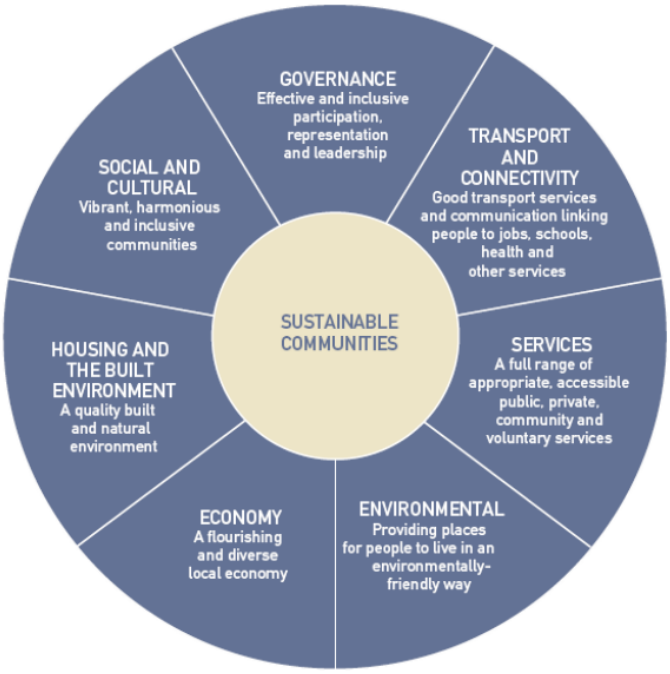


Figure 4.7. *The 'Egan Wheel'. Source: ODPM, 2004: 19*

41 The Executive Summary is available at: http://www.sustainableharborough.co.uk/wp-content/uploads/2016/03/State-of-the-Town-Report-Exec-Summary.pdf Accessed September 3rd, 2016

42 "Market Harborough tops State of the Town sustainability report", Sustainable Harborough news item (undated) available at: http://sustainableharborough.co.uk/state-of-the-town-report Accessed September 3rd, 2016

43 Available at: http://www.eib.org/attachments/jessica_bristol_accord_sustainable_communities.pdf Accessed September 11th, 2016

The Bristol Accord is a set of eight characteristics of sustainable communities, summarised in Figure 4.8., below:

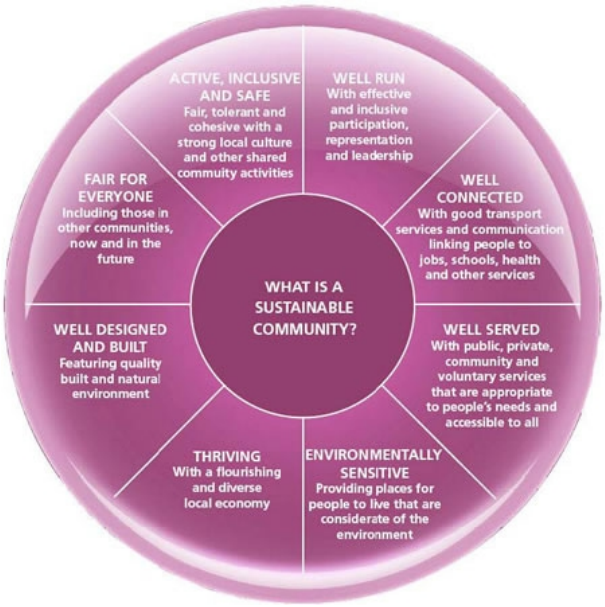


Figure 4.8. *The Bristol Accord 2005. Source: http://die-neue-stadt.de/archiv/ausgabe_ii_vi/bristol.html Accessed September 11th, 2016*

The relationship between the two models is clear, with each of the parameters referring broadly to the same domains of interest. The State of the Town report used a comparator set of ten other towns, selected by a group of interested parties in Market Harborough, based on overall size and distance from a major centre, among other parameters. Using the terminology of the Bristol Accord, Market Harborough ranked as “the most sustainable town using these measures by a clear and significant margin” (Rose Regeneration, 2015: 8).

The only domain in which Market Harborough ranked in the bottom third of the towns was in “Environment” due to its high levels of energy consumption. Unfortunately, the Executive Summary does not provide more details on whether this reflects a trend or a snapshot. Although DECC data suffers a two year reporting lag, the electricity and gas use trends are shown in Figures 4.4.,

and 4.5. respectively above. On the basis that most housing in Market Harborough is heated by gas central heating, the trend shown in Figure 4.5. depicts a general decrease in gas consumption.

Using responses to an eight week survey to consolidate and inform the ONS based data which were collected from ~1% of the town's residents, approximately 50% reported that they shopped in local stores, 83% rated the river/ canal as important, 66.7% believed the local environment to be important, and 25% had adopted renewables.

4.8. Chapter synopsis:

The present chapter has introduced the case study community-based sustainability (CBS) project. The Sustainable Harborough project (SHP) is one of twelve fully funded projects under the BIG Lottery Communities Living Sustainably grant, and is funded for five years. The chapter briefly traced the developmental history and antecedents that culminated in the successful submission of the grant application, including some of the political tensions between the RCC and the community group which originated the idea and successfully submitted an expression of interest to develop the proposal.

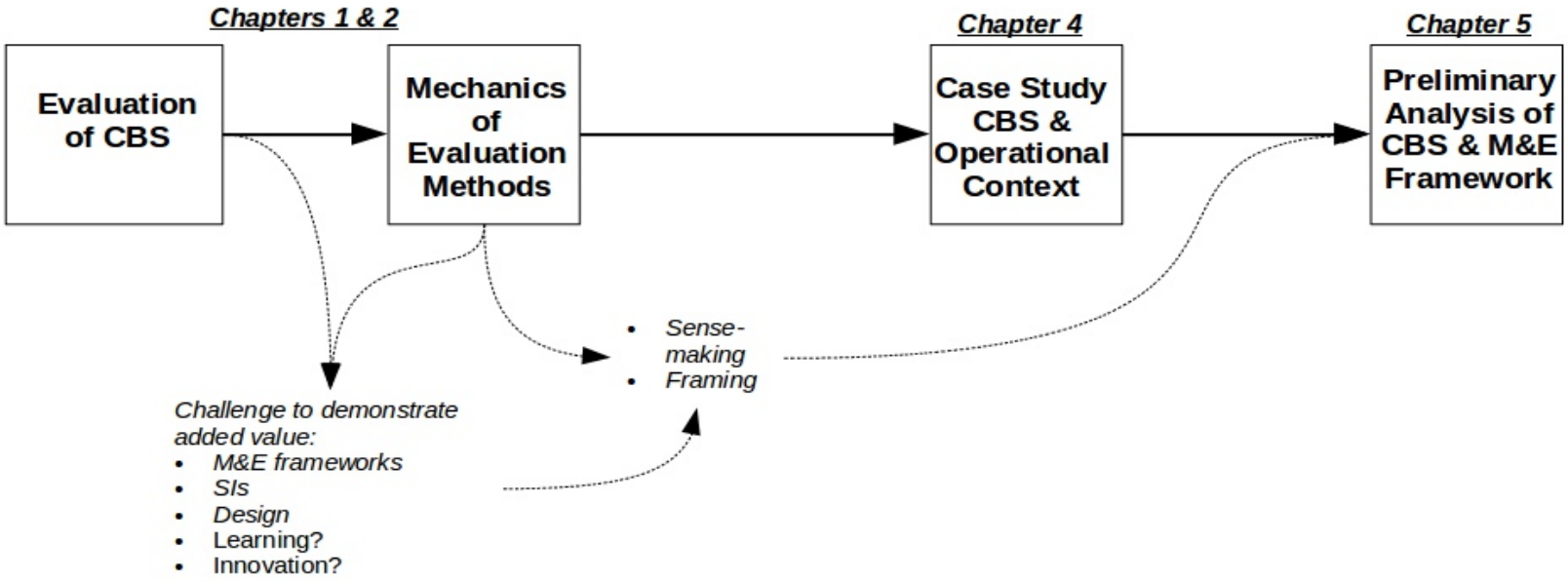
Public survey data and the development of key project outcomes were considered, and the question raised concerning how these aligned when translated into diagnostic and prognostic frames. The key measures identified by members of the sampled public tended towards concrete interventions while the outcomes proposed for the project funding bid generally tended to be abstract. The governance structure and expectations by which the project would maintain accountability were outlined, and consideration was paid to the process of implementing the funded project in terms of its intended aims and

outcomes, along with mechanisms by which it would monitor its performance and evaluate its impacts.

This chapter has also provided a profile of the operational domain within which the community-based sustainability case study project, Sustainable Harborough, is located. From the town's origins as a trade and resting station between two main medieval towns to a "quintessential English market town" (Rose Regeneration, 2015: 2), Market Harborough is a small sized south Leicestershire location that sports a relatively high proportion of independent retailers, low levels of deprivation, and relatively affluent and healthy families and older residents, the majority of whom own their own homes.

When the town's population are surveyed, what emerges is a profile of a population who are seemingly reluctant to give of their time and effort to get involved in community activities and either sharing or acquiring skills and knowledge, but who nevertheless still value lowering their environmental impacts and energy costs, and who support the greater availability of local food in stores. Moreover, when compared with ten other nearest neighbour towns, Market Harborough is already considered the most sustainable.

The foregoing data were produced as part of the work I did on behalf of the case study project to audit how much publicly available data sets offer in local intelligence and sense-making. The audit contributes to monitoring strategies and the development of a profile of the project's operational context. What becomes apparent is that the parameters of what is considered to reflect sustainability cover a significant range, and rely on a complex of proxy measures, many of which a CBS project has minimal influence over. With respect to the pressure for such projects to demonstrate value and validity, these are key considerations for both UK policy makers and project funders to entertain.



Key:

Main Chapter Themes

Reflective Sub-Text

5: INITIAL ANALYSIS AND FINDINGS:

5.1. Introduction:

The preceding chapter introduced the case study community-based sustainability (CBS) project and generated a profile of the social and physical context within which the initiative, the Sustainable Harborough Project (SHP), operates. Using terminology from the literature review, the development and submission of the funding application bid may be construed as a prognostic framing in response to a particular way that the originators of the bid understood the extant and future challenges – their diagnostic framing – to the town's resilience and sustainability.

While the preceding chapter discussed the case study initiative, along with its operational context, it is important to reiterate that the objective of this research is not the performative evaluation of the project itself, in terms of outcomes and processes that may result in changes in the sustainability of Market Harborough. Rather, the focus is on how the actors who comprise the project learn to respond to the wicked problems (Rittel and Webber, 1973) that they are confronted with. In the words used to describe the aim of this research, the focus is on:

> *How a community-based project becomes a second-order learning system through continuous developmental adaptation to the constraints of its operational domain to maintain its relevance as an intervention.*

The role of this chapter is therefore to begin an analysis of the data sets to identify evidence for how such learning occurs, and is manifest and

expressed. This draws on a coding dictionary (see Appendix H) which was compiled iteratively using the transcribed data sets in conjunction with concepts introduced in Chapter 2 around sense-making and framing.

As detailed in the previous chapter, this framing of both the problem and its remedy was born from the concerns of the small cadre of Transition Town Market Harborough (TTMH) members. It is feasible that, from the perspective of how the Transition Town network (TTN) diagnoses the future problems, the diagnostic framing advanced by the bid originators concerned threats to the town's sustainability and resilience arising from climate change and other Anthropocene impacts (as detailed in Chapter 2), as well as the risk of Peak Oil. On this basis, the prognosis to seek out funding to help facilitate a transition towards a more sustainable town makes sense.

Interestingly enough however, and as shown in the concluding sections of the previous chapter, not only is Market Harborough considered to be the most sustainable town out of ten nearest neighbour comparators (Rose Regeneration, 2015), there is also a low degree of motivation among the respondents to surveys to become involved and engaged if doing so requires them to give up their time. However, surveys do suggest that respondents are interested in buying locally produced food and saving money on energy and water bills.

Consequently, while the alignment between the diagnostic and prognostic framing may not be tight, there are at least several regions of overlapping concern and interest in amelioration. It is at this juncture that the SHP emerges as a vehicle with which to help bring about the changes that the bid identified as being valid outcomes commensurate with the aspirations towards enhancing the sustainability of the town.

What is of even greater interest from the perspective of research as a contribution to knowledge, rather than evaluation as facilitating the making of decisions, is how the case study CBS, ostensibly as a test-and-learn initiative, undertakes what may actually be considered its prime objective: to learn what does and does not work in the elicitation of pro-environmental behaviour. As a learning project, the focus of the present research concerns how the case study initiative actually designs itself to facilitate and augment its capacity to learn.

Whether or not the SHP achieves its target indicators is less important from this research perspective, but is critical from an evaluation stance. However, what *is* important from a researcher perspective concerns the research gap discussed at length in the first and second chapters, and how the investment of £1 million over five years contributes to our knowledge about what works to facilitate pro-environmental behaviour. Given the constraints identified earlier, what is of specific interest is how such an initiative identifies and generates its own learning.

All this is a pre-text for the research focus taken in the present chapter. While the preceding chapter adopted a relatively wide angle lens to consider the broad contextual influences, constraints and opportunities offered by the SHP's operational domain, this chapter adopts a tighter view around that data collected over the course of three years of my work with the project as a participating observer, and seeks evidence that contributes to the core research aim that motivates this study. That is, how a community-based project (in this case, the SHP) becomes a system of learning through continuous developmental adaptation to its operational context (here, Market Harborough)?

This chapter is the first to deal directly with the implementation of the research methodology described in Chapter 3 above. As such, its purpose is to attempt to organise the messiness of real-life research (Law, 2004; Reynolds, 2014) so that it may be communicated in a more coherent fashion. As a *post-*

hoc exercise, it gives research the gloss of being a streamlined and linear approach, a process that proceeds in an orderly and well thought out way. The experience of actually doing the research is anything but an orderly and linear process however, having involved a number of false starts, dead ends, and unexpected opportunities. This experience is evidently common to researchers, regardless of the specific discipline involved (Law, 2004; Callon *et al.*, 2008).

This chapter proceeds as follows: the next section introduces the data sets generated through the course of undertaking the research activities. This section gives a description of the data acquired according to its source and its characteristics. As the data sources distil into three predominant types – formal documentation comprised of the funding bid application, subsequent project meetings complete with supporting materials, and structured data collection activities, including an on-line stakeholder survey, semi-structured interviews and a focus group – this section arranges these chronologically. A full summary of the data set is given at Appendix F.

These data are used as the basis for a developmental trajectory of the SHP in terms of significant milestones. A temporal description is generally a useful way of contextualising the activity, decisions made, and challenges encountered and how these were responded to by a case study, and begins to assemble the project's development in a narrative structure (Denzin, 2002; Bryman, 2012). To use Bruner's terminology, doing so helps structure the project's narrative landscape of action (Bruner, 1986).

The third section introduces initial attempts at coding the data sets as per the Thematic Analysis methodology summarised in Chapter 3. Through applying the method in the iterative way as described by Braun and Clarke (2006), as will be discussed, it became apparent through the process of coding that the codes (see Appendix H) were themselves too descriptive and did not

adequately lend themselves to the development of themes that were appropriate to address the research aim.

In light of this, it has become apparent that there is a significant lacuna in the available literature on evaluation methods. This gap means that extant methodologies are unable to account for how CBS and international developmental aid initiatives develop and how they acquire the insight, learning and knowledge that enables them to become fit-for-purpose and adept at responding to the complexities of their operational contexts into which they have been deployed. Because of this gap, the application of thematic analysis has been deferred to Chapter 7. This deferment is necessary in order to introduce a body of literature in Chapter 6 on the so-called 'third wave' of cognitive science which is better suited to account for complexity and the evolution of learning systems, and provides a set of concepts with which to think about – and potentially evaluate—second-order learning systems. The chapter concludes with a synopsis.

5.2. Description of data sets

Over the course of ethnographic participant observation with the case community-based sustainability (CBS) project, a significant amount of data was collected. These data originate, in the main, from project meetings. The data set drawn on for the present study is comprised of 19 documents, including the bid and subsequent funding agreements and twice yearly reports to the Lottery, which are not associated with any specific meeting, and 150 meeting-based documents, including minutes and specific papers listed on the agenda to be discussed during the meeting. The complete list of all documents and meetings reviewed for the present study are appended hereto at Appendix F.

As I was only present at some of these 150 meetings, a comparatively small number of these were audio recorded (as described in Chapter 3) and 29 recordings were subsequently transcribed. In consideration of the research aim, priority for transcription was given to the Action Research meetings I facilitated with the SHP team, and the project Partnership Board meetings I attended. It was during these meetings that a greater emphasis was given on reflecting on experience and strategising for future activities.

In addition to these, other key learning meetings were audio recorded and transcribed, including a Theory of Change workshop facilitated by the New Economics Foundation (NEF) in November 2014, a six hour data collection tool design and planning session with the team in May 2015, and a two hour focus group meeting with the team to discuss monitoring and evaluation (M&E) relevant to the present research. On this basis alone however, this amounts to some 74 hours of audio recordings. With a transcription to audio time ratio of 3.5 hours of typing to every 1 hour of conversation, the 74 hours of audio recordings equates to approximately one and a half FTE months spent transcribing. Transcriptions of the six semi-structured interviews I conducted have not been included in this total. The data sets are summarised in Tables 5.1. below, and cover the period from October 2013 to September 2016.

Source	Quantity	Total Hours (Approx)
Action Research Meetings (Facilitated)	10	30
Energy Forum Steering Group Meetings	2	4
Food Forum Steering Group Meetings	4	6
Partnership Board Meetings	7	14
Semi-Structured Interviews	6	6
Miscellaneous (e.g. Theory of Change, Mid-Term Review, etc.)	6	14
Total Transcribed Meetings:	**35**	**74**

Table 5.1. *Transcribed Audio Recordings*

In addition to the 35 meetings that were recorded and transcribed, a further handful of meetings were also recorded but not transcribed because the content was either a repeat of what had already been discussed in greater detail elsewhere – for example planning for a town-based festival was discussed in a more reflective way during one of the facilitated Action Research meetings – or was not relevant to the research aims. A full listing of all data sources is given in Appendix F.

5.2.1. Funding Bid documentation:

Six documents are available pertaining to the initial funding application which cover a six month period from June to December 2012. These documents are:

- Review of outcomes and indicators
- Outline Project Delivery Plan
- CLS Survey
- RCC Director's Report to Trustees
- Partnership Agreement
- Project Delivery Plan SRC/1/010428951

This corpus is comprised of the record of activities undertaken to generate the bid. While any background correspondence or records of meetings are not available, the extant documentation does provide some initial orientation to the thinking behind the project, and gives some insight into the diagnostic framing that may have set the context for which the project was posited as a prognostic framing.

The first document in this set is not attributed to any author but is dated June 7th, 2012 and the file name is "*Review of outcomes and indicators.docx*" and summarises some of the steps undertaken to rationalise the outcomes against the proposed objectives for the project. What is of interest here is the impact focus that the outcomes begin to articulate. For example, the rationale for changes is described as

> "Drawing a distinction between impacts of our activities (e.g. changes in energy use in a school that we work with) and changes across the whole town (e.g. from electricity network data). Both need capturing I'd say, and are mutually supporting" (p. 2).

With the benefit of hindsight, it was precisely this broad-scale focus on changes "across the whole town" that became a significant challenge for the project when the team began to think about how to operationalise this outcome. Two of the difficulties doing so presented as a result of a two year time lag in obtaining energy use data from what was then DECC (Department of Energy & Climate Change), coupled with the issues around attribution and the influence of too many extraneous variables, such as the housing development and factors well beyond the project's scope for control.

The second document in this corpus, entitled "*Outline Project Delivery Plan.docx*" and dated June 8th, 2012, looks like an early draft of BIG Lottery's funding application form. Here, under section 5, the "Strategic Context" (p. 2. Added emphases), the aim of the project is constrained to a single sentence which is given as: "Our project aims to significantly improve the sustainability and resilience of Market Harborough, and *capture and share learning* from our experience to *support learning* on how to improve the sustainability of an average UK market town". This aim now includes a stronger and more explicit emphasis on learning which in the previous document ("*Review of outcomes and indicators.docx*": p.1) was reflected simply as "Improve and disseminate knowledge across UK communities on how to improve sustainability in an average-sized UK market town".

With this increased emphasis placed on learning, the reference to learning in the remainder of the "*Outline Project Delivery Plan.docx*" document creates some space to define the knowledge gap that is to be ameliorated through the implementation of the project. This is hinted at in the first of the six

core needs the project will address, but is more explicit in the sixth. Section 5.3. (p.3) reads:

> "1. A shift to more sustainable living in Market Harborough will require increased knowledge of how to achieve this and support and participation from the public.
> "6. There is little practical experience to date of how significant improvements to local sustainability can be achieved in Market Towns"

These two core needs are evidenced through references to the literature concerning the need to support changes in attitudes among the public through the provision of affordable and practical measures to increase energy efficiency. The method for accomplishing this is the provision and distribution of information-based leaflets, training courses, and demonstration projects. Although much of the emphasis is on providing knowledge to the public, the document does contain a sub-text that warrants highlighting since it tends to be elided by the more formal measures used to evaluate the project's contributions.

This sub-text concerns how the project seeks to develop and reflect on its own learning, and is a key aspect of the project for two principal reasons. First, the inclusion of Action Research as part of the funded and established project architecture, as well as the academic support which financed my own PhD post and this research, secures project learning as an integral component of the design. The second reason is that although the project does emphasise its learning, the evaluation methods for accounting to funders and monitoring performance are inadequate to do justice to it.

The learning is at two levels. The first is the recognition that "There is little understanding of the most effective strategies for more typical UK market towns" ("*Outline Project Delivery Plan.docx*", 2012: 7), and therefore the need to address this gap. The second learning is about how a project actually goes

about learning how to do so. The need for the project's own learning about what works is evident, and while steps are put in place to try to capture this, the methodology for doing so is under-developed. It is this latter point which concerns this research, and will lead to the generation of a prototype developmental evaluation framework, discussed more fully in Chapter 9 below.

As the Communities Living Survey (CLS, dated June 12th, 2012) has already been discussed at length in section 4.5. above, it will not be considered here, except to repeat that it is difficult to ascertain the degree of influence the survey findings had on the shaping of the proposal, since a number of the activities that the project was committing itself to did not seem to be especially popular with those who were surveyed.

In the Rural Community Council (RCC) Director's Report to the Board of Trustees for the September 12th, 2012 meeting, he provides a brief synopsis of the recently awarded contract for £1 million. Here the project parameters on "Knowledge skills and support partnership" focuses on public education and knowledge building, while the "Knowledge sharing" parameter focuses on dissemination through the State of the Town report. All reference to the project's own needs for learning are absent.

In the Partnership Agreement[44] (n.d.: 3), the diagnostic frame is described in terms of the partnership coming together

> "to meet significant challenges in Market Harborough over the five year period (2012-2017), arising from forecast population growth, increases in the carbon footprint and the levels of air pollution and increased pressure on services and infrastructure".

The document continues (p.3) with its proposed prognostic frame which describes the

44 The document itself is not dated, although signatures within the body of the document are dated at the 20th and 21st December 2012.

> "purpose of the partnership […] to optimise and share the resources, skills, knowledge and experience of a number of organisations across all sectors, to manage and deliver a range of environmental initiatives in and around Market Harborough".

In the last of these bid documents, the Project Delivery Plan (2012) identifies as part of the project's deliverables the recording and dissemination of knowledge "across Market Town communities on how to improve sustainability in an average-sized UK market town" (p. 3). The list of four outcomes again has an exclusive focus on improving the knowledge and understanding among local people of how to live more sustainably.

Once again, all reference to the project being a learning project – one that both learns how to do sustainability in a market town and one that learns what works – seem to have been subsumed under the rubric of educating and informing the public. This implies that the project staff and Partnership Board are already adept at 'doing' sustainability interventions, seemingly on the assumption that what (might) work in one place will also work in Market Harborough. This is especially troubling in light of the trend reviewed in Chapters 1 and 2 that suggests projects of this nature are unable to demonstrate their added value in terms of impacts and lasting changes.

Finally, under the heading "Monitoring your project" (Project Delivery Plan, 2012: 63), the need for project learning is explicitly recognised with reference to the inclusion of Action Research as a resource, which "will be a part of the *learning within the project* and will not only monitor progress against set criteria but will provide a learning opportunity for partners" (Added emphasis). A few pages later, in discussing the contribution of Action Research to a "test-and-learn initiative", Action Research "offers an effective and appropriate strategy to *embed reflexivity*, improved performance and knowledge dissemination" (p. 65. Added emphasis). Here is a clear statement about the need for the project itself to engage in learning how to do sustainability type work, and references the value of a project engaging in reflexive (second-order)

learning. This then goes to the heart of the research aim concerning how a project becomes a learning project within the operational context of complex dynamic systems.

5.2.2. Project work documentation

In the collected data set, there are a significant volume of official project documents. For the most part, these are records of meetings, and supporting papers for those meetings. In the present research, these are useful context-setting data, that enable an activity time-line to be constructed in terms of key developmental milestones and multiple activities that the project has been engaged with over the course of its funding. This time-line is appended as Appendix G.

What is of greater richness from a research perspective are the meetings that were audio recorded and transcribed. This is because with official records of meetings, these are presented in an abstracted form that glosses over the process and the key words and phrases that are a source of data for the qualitative researcher.

Consequently, this section will review the Action Research work, which was emphasised in the Project Delivery Plan and discussed in the preceding section, given that this was the resource made available to the project team to help the team learn reflexively and is germane to the present research. The provision of which is the key contribution to capturing the practitioners' reflective learning. The approach of Action Research is the

> "cogenerative process through which professional researchers and interested members of a local organization, community, or a specially created organization collaborate to research, understand, and resolve problems of mutual interest" (Greenwood and Levin, 1998: 93).

It is “first and foremost, a way of ‘keeping the conversation going’” (Greenwood and Levin, 1998: 86).

Over the course of participating in and observing the case study project (see 3.3.2.1, above), I facilitated ten Action Research meetings. Initially, the meetings followed a process structure that the researcher and team inherited from a previous facilitator (who had also been pivotal to the development of the funding application), but this gradually gave way to a more flexible and responsive alignment of structure with the issues selected by the team on the day.

The strategy I adopted to the Action Research meetings was consistent with the approach described as ‘orthogonal’ (Mendez, Coddou and Maturana, 1988; Efran, Lukens and Lukens, 1990). This meant engaging the team from a perspective that straddled the boundaries of being an insider and an outsider simultaneously. In practical terms this required that I use the terms and language of the team, participating in common descriptions and distinctions, but also offering interpretations about relationships among events from a perspective that was distinct to that in common circulation among the team members. As Burns (2010: 143) comments on the Action Research process, the facilitator’s role is “to encourage participants to explore issues through different lenses, to pose challenges to them and support them to take actions and learn from it”.

As Action Research facilitator, I could reflect an image or an interpretation of the situations that the team described in the sessions, and draw from other contexts to which I had been privy, in order to demonstrate to the team that not only had they been listened to, but also to help trigger further material and alternate perspectives to facilitate the team reflect on and to identify new insights. Throughout the process, I maintained the perspective that the alternative interpretations were my own and were not reality claims.

The opportunity to engage the team in this way was seen as valuable, with one staff member commenting that they:

> “Value the opportunity to explain things that the team are familiar with but to an 'external pair of ears' may not be as accepted and gives a chance to look at the familiar in a new light” (SHP team member, Action Research meeting, 2014-04-02).

The team used these sessions as opportunities to critically reflect on processes, decisions, trends and patterns, and to identify novel opportunities to work, be this through consolidating an approach already undertaken or to shift tactics in response to emerging information. As a result, these sessions offered rich opportunities to reflect on the project’s own learning.

5.2.3. Structured data collection

There were three formal data collection activities. These were a series of six semi-structured interviews with representatives of the team, the Board, and the two SMEs – Harborough Energy and edibLE16. The second was a broader stakeholder on-line survey, and the third, a focus group with the SHP team members themselves to explore their experiences and uses of monitoring and evaluation. These are discussed below.

5.2.3.1. Stakeholder survey

As noted in section 3.3.2.4., above, an on-line SHP stakeholder survey was conducted during April and May 2016. The survey was incentivised with two random draws for food vouchers from edibLE16. The survey questions are appended to Appendix E, and in summary, the survey was intended to explore three themes. These are discussed below:

Context setting:

The first concerned the stakeholders themselves, specifically their awareness of the project, membership in other community-based and national organisations and groups which are oriented towards sustainability, the nature and role of their relationship with the project, and how involved they were in terms of the duration and the extent of their involvement.

The majority of respondents (60%, n = 21) were members of edibLE16, 17.1% (n = 6) belonged to the Wild Life Trust, and 14.3% (n = 5) indicated that they belonged to the Harborough Environment Group, Greenpeace, and/ or the Green Party. One of the respondents listed five such organisations which they were involved with in addition to participating with Sustainable Harborough. While most reported that they were only involved in one organisation, several reported being involved in up to five.

Changes and objectives associated with the project:

The second theme explored the respondents' perceptions of any changes they attributed to the project, their impressions of what the project was testing with respect to addressing some of the challenges associated with community sustainability, and their own learning about what seems to work to elicit shifts towards sustainability at community scales.

In terms of the changes the respondents observed:

Of 24 respondents, 5 (20.83%) reported that they had not noticed any changes; the remaining 19 respondents generated 44 observations of changes. Of these, one observation ('visible signage') cannot be interpreted usefully. Of the remaining 43 observations, 4 respondents commented on the restoration work on the River Welland which was a piece of work carried out separate from the project by one of the partner organisations which has largely been

uninvolved with the project having not attended any of the board meetings since early 2014.

One observation commented on the work of the local church group in organising a Save Our Planet workshop, followed up by a subsequent Q&A panel session on sustainability in Market Harborough. The project had minimal direct involvement with this activity, and whether or not it can be credited with inspiring it is open for debate, especially since the Save Our Planet was described by a SHP team member as being too “doom and gloom” for the project to be overtly associated with, although it did host an afternoon workshop to explore ideas for addressing fuel poverty and for branding local food.

Of the remaining 38 observations, 10 (26.3%) refer directly to impacts, including: increased awareness of climate change and sustainability, improved opportunities to network and buy local food, and PV on the Market Hall (which was a project initiated by SHP through a feasibility study but which was then appropriated and implemented unilaterally by the HDC).

Of the 38 observations that can be linked to the project more directly, the majority (73.7%) concern project activities: 5 observations reported on edibLE16, 2 criticised the low profile of both the project and of edibLE16, while another commented on the increased profile of the project, 4 commented on the Green Open Homes annual event, and 4 on the public events the project is involved with, and 4 on the local Food and Drink Map.

With respect to what respondents thought was being tested by the project being termed a ‘test-and-learn’ endeavour by the CLS, by and large, most respondents identified that the project was involved in experimenting with specific types of activities (e.g. local food and drink, community-owned and energy efficiency activities), while many others identified that the project was testing out public engagement and awareness raising among the local

community. A couple of respondents noted that the project was testing building and maintaining collaborative alliances and networks, although one respondent remarked that not enough had been done in this regard to work with existing groups in the town. A few respondents commented that there were relatively few members of the public involved.

Understanding of key concepts:

The final theme explored respondents' understanding of key terms in the CLS literature that describe the rationale for the fund, such as: sustainability, resilience and adaptation; the skills and attributes required to address these objectives; the most challenging obstacles to making a shift towards sustainability; and how those challenges might be addressed. This theme yielded the following findings:

Sustainability:

Twelve respondents agreed with the triple bottom-line emphasis in the Brundtland Commission definition given as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development [WCED], 1987). Nine respondents agreed with the dictionary definition (http://www.dictionary.com/browse/sustainability) given as "The quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term ecological balance". Four respondents provided their own understanding of sustainability, while Ehrenfield's concept of sustainability as flourishing, "The possibility that humans and other life will flourish on the Earth forever" (Ehrenfeld and Hoffman, 2013: 17), was not selected.

Resilience:

Twelve respondents selected the engineering definition of resilience, given as "Resilience refers to the speed and efficiency at which a system bounces back to its original shape if it is deformed (e.g. a suspension bridge

swinging in high winds)". Five respondents selected the ecological definition of resilience given as "Resilience refers to the amount of pressure a system can take before it changes state and becomes something else (e.g. a lake that changes from clear water to turbid)". Five respondents offered their own definitions of resilience.

Adaptation:

Adaptation was broadly identified by respondents as a process of change required to fit the demands of novel conditions. Fitting was most frequently identified as successfully coping, while the source of novelty was broadly unspecified, and only directly attributed to climate change in a few instances. Flexibility and responsivity are characteristic of this process of fitting to novelty, especially when the changes were seen as originating from outside of the respondent's control or domain of influence.

Acknowledgement of any two way influences between actor and environment were absent – change was a uni-directional pressure on the respondent to make the changes necessary to fit the new circumstances.

As can be seen from the foregoing, the challenges facing any CBS initiative are not merely logistical or practical, but are conceptual as well. The survey respondents, mostly comprising people from Market Harborough already involved pragmatically in at least one 'sustainability'-oriented community of practice, evidence a range of understandings of the three key concepts on which the Communities Living Sustainably (CLS) fund is founded. It is well documented that meanings associated with sustainability are contested and politically volatile (Meppem and Bourke, 1999; Connelly, 2007; Bell and Morse, 2008; Hermans *et al.*, 2010), and this limited survey sample appears to confirm this. As one source of the complexity CBS projects face in engaging with stakeholders, this raises difficult questions, such as whose definition of sustainability is emphasised? Put differently, if resilience means resistance to

change, then should a high carbon economy be made more resilient? Or, what does adaptation mean for stakeholders interacting with globalised and complex technological infrastructures?

When the impacts and changes arising from the project are considered, most respondents pointed to changes that could not be attributed to the project, such as the River Welland restoration work and PV panels on the Market Hall, while others spoke of activities but without being able to identify impacts. This would suggest that the project has not been clearly identified with triggering noticeable changes from the respondents' perspective. Finally, respondents reported that they thought the project was testing social alliances and networks, public engagement and awareness raising, although most identified the project with instrumental activities, such as local food and drink and community-owned energy projects.

5.2.3.2 Semi-structured interviews

Six semi-structured interviews were undertaken with key informants. Each interviewee was given a printed copy of the "Participant Information Sheet" (see Appendix B) and was asked to sign a consent form (see Appendix C). Two interview protocols were used, to reflect the different types of involvement among the interviewees. The protocol for those involved in one or more of the governance boards ("Governance variant") is Appendix D1, while the protocol for those involved more directly in the project is Appendix D2 ("Project variant").

Each interview was recorded and transcribed. Broad themes were identified ahead of time and captured in the protocol, but the question set was treated as secondary to the flow of conversation emerging in the context of the interview. This led to each interview having a very different feel to it which differentiated one from the other. For example, one interview assumed the shape of a wider ranging conversation, while a second required that I remained

closer to the pre-determined themes due to the respondent requiring more prompts to talk.

The semi-structured interview format was thought to be the most appropriate due to the degree of flexibility it allows, while maintaining a balance between pursuing a line of inquiry relevant to the research and respecting the experiences and perspectives brought forth by the respondent. Here, the format was thought to offer a way of inviting the emergence of respondents' narratives within the framework of a focused interview setting.

The emphasis in the interviews was given to encouraging the respondents to tell the stories about their own involvement in the project, the nature of change and how that is understood and determined, and most interviews concluded with a variation on the so-called 'Miracle Question'. This is a therapeutic technique developed by Steve de Shazer and Insoo Kim Berg at the Milwaukee Brief Family Therapy centre (de Shazer, 1980), which invites respondents to describe a situation in which the problem no longer persists. In the context of the interviews respondents were invited to describe how Market Harborough would be different from the present if they woke up one morning and the town evidenced 'sustainability'. This was an attempt to help surface more implicit diagnostic and prognostic framing from the interviewees.

5.3. Thematic Analysis – A first pass at the transcriptions:

From the foregoing discussion of traditional evaluation method and its limitations to discern the processes and uses of learning in projects, it is evident that, with the exception of Patton's (2011) developmental evaluation (DE) approach, traditional evaluation methods would not surface the process-oriented aim of the present research. To achieve this, the Thematic Analytic

method (Braun and Clarke, 2006) was recruited. As described in section 3.5., above, the method involves several iterations of review and interpretation leading to the development of two or more generations of coding dictionaries.

In the present study, using concepts drawn from the sense-making and framing literatures reviewed in Chapter 2, a coding dictionary was developed for these purposes (see Appendix H). This dictionary was used with the RQDA (Huang, 2014) software to mark up as the first pass to surface themes pertinent to the research aim. Transcribed interviews and select meetings (see Table 5.1., above) were parsed using the dictionary and a range of themes began to emerge.

However, while this approach proved to be useful, it was so only up to a point. What emerged were themes that were superficial and instrumentally oriented, characterised by a strong emphasis on the content of learning (e.g., what is involved in organising a town centre festival; the steps and check-lists to do a community energy share offer; convening a group of local food and drink stakeholders and to work out a common vision; etc.). There was little that helped to surface the detail required to address the research aim.

This is not to suggest that the literature itself is inadequate for the exploration of learning processes. What it does mean is that through my own reading and application of that literature, the themes that emerged through my immersion with the data set using sense-making and framing concepts described the *what* of learning. I was unable to describe the *how* of the processes through which the case study actors learn to maintain relevance of fit with the epistemological challenges of addressing the wicked problem of sustainability within the social-ecological systemic constraints of Market Harborough as the context of operation. This double process of project adaptation and innovation – learning – was beneath the level of granularity I was able to achieve using these concepts.

As a result of this, the code dictionary developed through reference to the sense-making and framing concepts was set aside and a second set of literatures was consulted which privilege an account of cognition and second-order learning. This literature is the topic of the following chapter.

5.4. The challenges of complexity:

Following significant immersion in the data described in section 5.2. above, it is apparent that while the literature recognises contextual complexity as a constraint on the one hand (Burns, 2010; Burns and Worsley, 2015; Dunkley and Franklin, 2017), and the challenges involved in M&E on the other (Patton, 2011; Dunkley and Franklin, 2017), extant evaluation methods are seemingly ill-equipped to address these matters (Guijit and Roche, 2014; Mowles, 2014).

For example, the project – as a learning project – demonstrates that it is, indeed, learning. But what it is learning about is not so much what may or may not work in terms of eliciting community sustainability, even though this is the ostensible purpose given the formal bid application documents discussed in section 5. 2.1 above (Reeves and Mitchell, 2016). Rather, the project seems to be learning more about the processes involved in learning *how to do* sustainability. That is, the project is becoming self-aware and is engaging in reflective practices oriented towards continuous improvement in its own processes, in what is more appropriately thought of in a developmental way.

Traditional evaluation methodologies are ill-equipped for evaluating these qualitative developmental processes, even though they are critical to the generation of effective practices. Instead, as the Magenta Book (HM Treasury, 2011) and other mainstream approaches to evaluation demonstrate (e.g., Stufflebeam and Shinkfield, 2007; Coryn et al., 2011; Gertler et al., 2011;

Nakrošis, 2014), the emphasis is on impact evaluations, especially those that recruit a model of randomised control trials, the so-called ‘gold standard’ of evaluation. Failing this, impact evaluations seek to pursue quasi-experimental methods, even though these too may not be appropriate for the setting or the activity being evaluated. Other than impact evaluations, the tendency is towards process evaluations – that is, the mechanics and theory of change which lead to a specific output and outcome – as well as formative and summative evaluations.

Amongst this range of approaches however, there seems to be a gap in the field to evaluate the learning processes through which a project becomes adapted to its context of operation and adept at operating effectively therein. This gap has recently been broached by the introduction of developmental evaluation (Fagen *et al.*, 2011; Patton, 2011; Rey, Tremblay and Brousselle, 2014; Hayes, Witkowski and Smith, 2016), but remains an as yet under-researched area even though the value of this with respect to CBS initiatives has recently been identified (Dunkley and Franklin, 2017).

Nevertheless, despite an emergent recognition of the value of developmental evaluation for tracking a project’s evolution in becoming fit for the purposes of effective engagement with the complexities of its operational context, the theoretical basis for such developmental evaluations still tend to be rooted in a positivist cognitive paradigm. Such cognitive theories posit ‘mind’ and thinking as the manipulation of symbolic representations of a singular objective reality, and are seemingly impervious to the influences of systemic thinking that have been in circulation since at least the 1960s. Moreover, such cognitive theories are at odds with, and hence struggle to account for, post-normal contexts and complexity, even though these latter descriptions are more appropriate depictions of the environments within which social projects operate.

Instead, what is required is an alternative cognitive scientific paradigm. Such a paradigm needs to be able to account for post-normal and complex systems descriptions. Moreover, from the perspective of this research, it needs to facilitate the generation of concepts that can be applied to help explore how to track, understand, and evaluate the development of the Sustainable Harborough Project as a learning project that learns how to engage meaningfully with the community to elicit sustainability outcomes.

One such paradigm has been identified and is introduced in the next chapter as a secondary set of literature that provides the theoretical constructs with which to progress the analysis of the processes of learning and development of the SHP as a learning project. This cognitive paradigm has its roots in the biology of cognition and is collectively referred to as the enactive approach.

Once this approach has been introduced, Chapter 7 will revisit the thematic analysis of the data set, now equipped with suitable conceptual tools to proceed. In turn, this will be used as the building blocks with which to produce a developmental evaluation framework informed by concepts from enactive cognitive science.

5.5. Chapter Synopsis:

This is the second of the analytic chapters in this thesis and described the data set that had been collected through methods discussed in Chapter 3. The data were considered overall, but particular attention was given to the development of the fund application documents and to an on-line survey conducted in April and May 2016. The bid development documents were considered in detail in order to surface some of the key ways that the project was to be set up. This involves the project's diagnostic and prognostic framing

and how these documents identified and defined the prospect of the project being a learning project.

Due to the bid documents' emphasis on Action Research, and because the activity of facilitating ten Action Research meetings with the project team generated very rich data relevant to the research aim, the process of these meetings was described. That the facility for Action Research, if not the funding of the PhD post itself, was incorporated into the Project Delivery Plan (2012) reflects a meaningful effort for the project to capture learning. However, in the outcomes, the focus on learning concerned an emphasis on enhancing the knowledge and learning of the public with respect to energy efficiency and sustainable living.

This oversight seems to (implicitly) assume that the project already knows how to do sustainability in Market Harborough, even though some of the documents acknowledge that little is known about what works in market towns, or assumes that the project knows what works elsewhere and this can be applied to the Harborough context with minimal modifications. In either case, the assumption appears to underscore Burns' (2010; Burns and Worseley, 2015) point that such thinking suggests an approach to developing reductionist and linear solutions for complex problems.

The third set of data that was also described originated from responses to an on-line survey. The inclusion of this data set here is to illustrate that even among well informed members of the public, there were still a range of ways of understanding key terms underpinning the CLS fund, even though such terms were used in a way that seemed to assume consensus about their meaning. There is also variation in what respondents thought was being learned by the project, which has to do with themes raised earlier in this discussion around sense-making, and how problems and solutions are framed and aligned.

Using a coding dictionary developed with reference to concepts from the sense-making and framing literatures reviewed in Chapter 2, a first attempt to thematically analyse the transcribed data set was made. Unfortunately however, this tended to surface themes that described superficial and instrumental characteristics of learning activity – the *what* or learning, but not the *how*. It became apparent that a second set of literatures which accounted for second-order learning was required to achieve the aim of the research.

This point is picked up again in the fourth section of the chapter, where the standard approaches to evaluation (e.g., process, impact/ outcomes, formative, and summative) appear unable to adequately track and evaluate how projects learn to do what it is that they are designed to do. In recent years, a new approach to evaluation has begun to emerge and this approach, nascent as it is, is specifically focused on evaluating project development (Fagen *et al.*, 2011; Patton, 2011; Hayes, Witkowski and Smith, 2016; Dunkley and Franklin, 2017).

Part of the challenge confronting evaluation methods is that they are predicated on a linear causal model as an ideal. The random controlled trial is the gold standard for evaluations (HM Treasury, 2011), but outside of laboratories, this ideal is difficult to attain. In practice, evaluators exercise diminishing experimental control to isolate and attribute the source of any effects to a project element through the elimination of counterfactuals. The challenge posed by tracking (linear) causality is not readily overcome in evaluation practice.

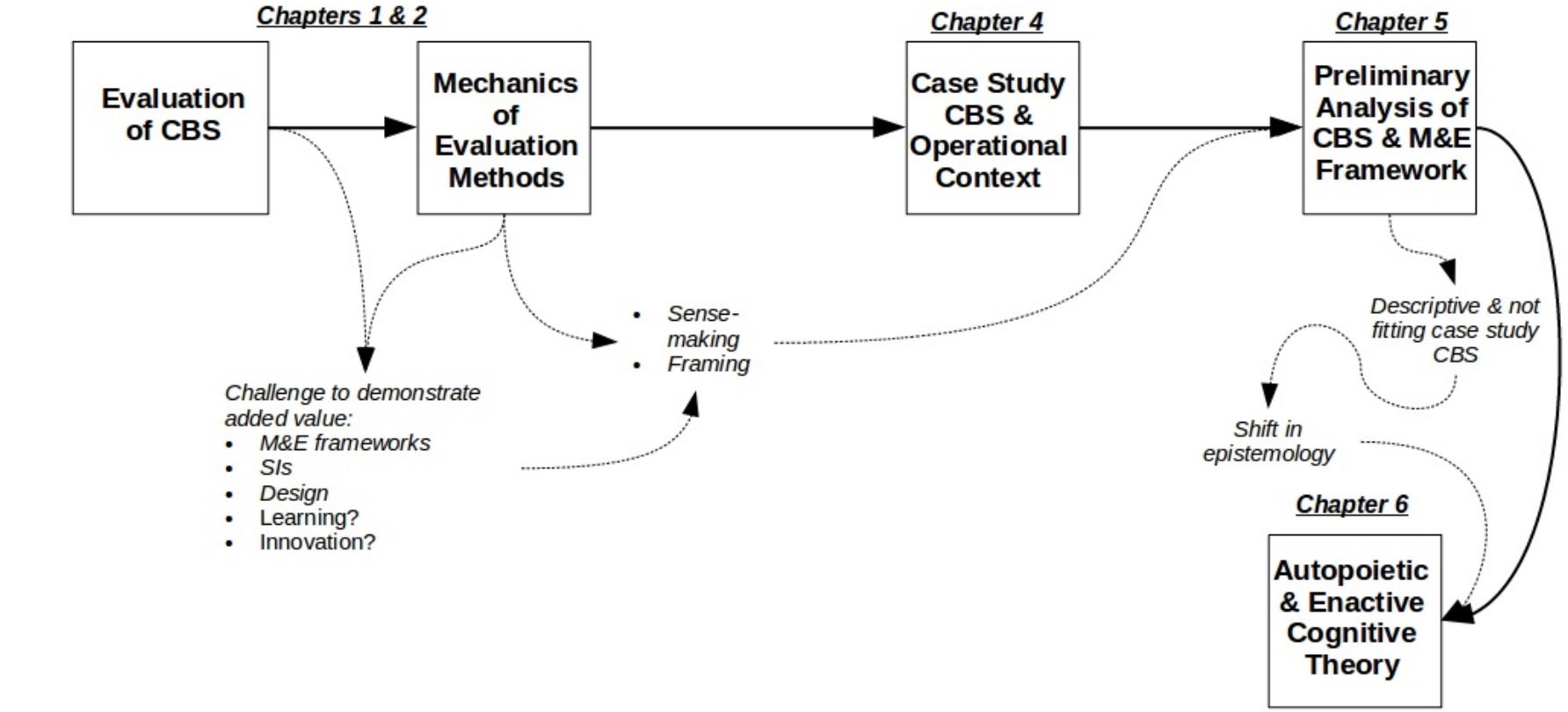
A further challenge is that evaluation is undertaken as a variant of a formative or summative performance assessment relative to a pre-determined set of parameters, and is limited in its capacity to explicitly account for and reinvest learning into the implementation of the project. That is, evaluation practice is unable to recursively be a source that supports innovation and

learning because to do so blurs the relationship between the evaluation method and the evaluand, whereby the 'purity' of the performance cannot be maintained.

These challenges refer to the reductionistic and 'normal' scientific paradigm within which evaluation practice is rooted (Pawson and Tilley, 1997; Stufflebeam and Shinkfield, 2007; Scriven, 2010). Evaluation is an extension of a model of the mind and cognition characterised by a computer metaphor. This model posits that inputs from an external and objective world are taken 'into' the brain via sensory perception as symbolic representations, are duly processed, and then acted upon as behavioural responses. Responses are then evaluated for congruence with the external world.

Even though developmental evaluation explicitly recognises complexity and the value of iterative learning and innovation, it still appears to wrestle with, and be constrained by an epistemology anchored to a positivist account. By positing thinking and 'mind' as the manipulation of symbolic representations of an objective (and singular) reality, developmental evaluation seemingly struggles to articulate a perspective consistent with post-normal and complexity science.

In an effort to generate some conceptual tools to both further the current research beyond the notions of 'sense-making' and 'framing' and to make a contribution to the evolution of developmental evaluation, the next chapter introduces a set of literature on an approach to cognition that is able to account for complexity. Consequently, the thematic analysis of the data set is deferred until Chapter 7 when it can be undertaken with an appropriate conceptual tool kit. In turn, these data will be used to design a developmental evaluative framework for use in conjunction with traditional evaluation methods. This will be the focus of Chapter 8.



Key:

Main Chapter Themes

Reflective Sub-Text

6. COGNITIVE SCIENCE FOR COMPLEX CONTEXTS

6.1. Introduction:

Literature on how non-profit community-based (sustainability) organisations respond to the increasing expectations put upon them by funders, policy makers, and other stakeholders is sparse (Hobson, Mayne and Hamilton, 2016). As summarised in Chapter 1 and detailed in Chapter 2, the response to such expectations is quite varied and disparate, and evaluations are conceived of and conceptualised differently to how evaluators might expect (Carman, 2007). Typically, data collection and evaluation activities are undertaken internally by project staff with little support or external funding to do so (Carman, 2007; Hobson, Hamilton and Mayne, 2014). As if these challenges were not already enough, in the domain of international developmental aid and community-based sustainability (CBS) project work, these findings are exacerbated by a number of debates around the value and validity of indicators, how monitoring and evaluation (M&E) informs subsequent practice, and whether the problem concerns the nature of the project design themselves.

These debates polarise into two factions. On the one hand, the challenge concerns how practitioners make use of the monitoring and evaluation (M&E) frameworks, as well as whether or not such frameworks, and the indicators these are predicated on, are valid. On the other hand, there is the claim that the actual design of the projects are themselves predicated on a set of assumptions, a programme logic or theory of change, that are inappropriate for the complexity of the contexts to which such programmes are intended to operate within. That is, to use the language of framing from social movements research, the prognostic framing is misaligned with respect to the diagnostic framing.

These competing explanations may be summarised respectively as a challenge pertaining to how a project engages in learning and a challenge concerning the design of the project relative to the nature of the problem. From the foregoing research however, this explanatory tension does not reduce to a binary opposition of either one or the other account, but, and in recognition of the complexity of intervention activities, seems to be a matter of both the challenge of learning and the challenge of fitting interventions to problem contexts.

The logic underpinning many such interventions is linear and reductionistic, and assumes that there is an objective reality that needs changing, and that the intervention is designed to do just that. Broadly, M&E frameworks are designed to evaluate how close a project is to addressing the nature of the defined problem, and M&E reports are intended to facilitate accountability, typically to funders and stakeholders.

However, as noted in Chapter 2, intervention projects are dogged by highly variable results, for example, when a project design yields the expected results in one context but doesn't when applied to a similar problem in an alternate context. A local food growing initiative might take off and garner high public engagement and endorsement in one area, but be woefully under-engaged in by a largely disinterested public somewhere else: the project logic is the same, but the influence of the setting is sufficient to undermine the perceived value of the intervention.

As a result of these variable findings, and in recognition of the scrutiny and growing policy-based pressures on CBS projects to help elicit changes at community scales for purposes of adapting to climate change, it appears to be necessary that how such projects are imagined is to be revisited. That is, how are projects designed, how are the problems to which they are seen as a viable solution understood, and how is the project's M&E framework to be more

appropriately utilised to facilitate an alignment between the design and the problem? It is evident that pre-designing projects as relatively fixed entities means that interventions are ill-equipped to be adaptive. Moreover, there is the concern that if the only tool is a hammer, then all problems are nails, and when applied in the context of a CBS initiative, if the project is unable to respond meaningfully by changing its processes, then the project is not fit-for-purpose.

This requires that project designers and M&E framework developers are able to entertain complexity, that they are able to think through the multiple perspectives and non-linear causality, and the influence the observer exerts on what is observed. Monitoring and evaluation methodologies are often unable to evaluate the learning an initiative undergoes in the process of becoming fit-for-purpose. This involves a different set of parameters from those which track impacts or processes (such as a project's programme logic or theory of change), and is not addressed through either formative or summative evaluations. Instead, what *is* required is a way of evaluating the developmental trajectory of an initiative. That is, of evaluating how the project learns to become fit-for-purpose and adept at working within complex contexts.

The first attempt to parse the transcribed data using a coding dictionary developed with reference to sense-making and framing concepts (see Appendix H) was able to help surface predominantly instrumental learning, but the processes underpinning that instrumentality could not be adequately accounted for. In keeping with Objective 4 (see section 1.3., above), this chapter introduces enactive cognitive theory as a potential heuristic with which to account for and facilitate project actor learning with reference to a developmental evaluation approach.

To accomplish this, the chapter provides a brief synopsis of the history of cognitive science, in particular the theories of cognition, since the 1940s and 1950s in order to give the significance of the enactive cognitive theory a

context, to demarcate how it is distinct from its theoretical predecessors. Then the empirical and intellectual roots of the theory are discussed, and the chapter concludes with a consideration of some of the practical implications of this theory for CBS project actors.

6.2. Developmental evaluation and complexity:

To date, there is a very sparse literature on developmental evaluations, which becomes even sparser when seen in the context of CBS and international developmental aid initiatives, with the notable exception of Michael Quinn Patton's (2011) work. However, it is increasingly evident that there is a need for such evaluations in this domain so that initiatives can be supported in responding appropriately and adequately to the complexities they must contend with operationally (Dunkley and Franklin, 2017).

But this dearth of methodology is compounded by the lack of a coherent theoretical basis for understanding how initiatives become learning organisations. While there is a sizeable body of literature on this in the management literature, to date, very little has been written about CBS initiatives as learning organisations. Moreover, developmental evaluation, as a nascent approach, is still rooted predominantly in a paradigm of cognitive science that understands thinking (and mind) as the manipulation of symbolic representations originating from an objective reality. Such a paradigm is challenged by complexity and post-normal science, and consequently an alternative paradigm for understanding cognition is required, one that can account adequately for the emergence of second-order (or reflexive) learning.

In the context of the case study CBS, Sustainable Harborough has been framed as a learning project. Drawing on the complexity perspective enables a reflexive question to be posed about the nature of the learning a "learning

project" engages in. The relevant question is therefore *What kind of learning does the project make possible through its experiences of learning?* In other words, what does a learning project learn about the processes of learning within the context of testing what works to elicit changes towards sustainable outcomes and impacts at a local community scale?

Attempting to address this line of inquiry has directed my attention to a body of literature that seems well suited to help practitioners, theorists and policy-makers to think about complexity (Gregory, 2006; Jackson, 2007; Wood, 2011; Capra and Luisi, 2014). The crux of the matter is that thinking and learning, apprehending and responding to complexity, are cognitive activities, but the traditional models of cognition (and evaluation) do not provide a robust account for complexity thinking. From the perspective of traditional cognitive science, a cognate actor perceives representations of an external environment in the form of various symbols that are then manipulated. However, the external world is the final arbiter of 'truth', and as such there can only be one 'truth' with which one's cognitions align to various degrees of correspondence (Dennett, 1991).

However, complexity and so-called post-normal science (Tognetti, 1999; Funtowicz and Ravetz, 2003) makes the multiplicity of perspectives a key feature in its description, which problematises the claim of a singular, fixed external reality. Complexity also privileges a dynamic model of the world, one that is in constant flux, with emergent properties that arise from the activities of lower level processes. Here again, the traditional model of cognition falls short in its capacity to account for these characteristics.

Finally, complexity science recognises the generative processes of communication: information is not so much 'out there' in the world, but is generated through the processes of communication and engagement with the multiple perspectives that constitute the world. Here too, the traditional model of

cognition is ill-equipped to account for these claims, given its reliance on a tube metaphor description of communication which involves a message being sent and received to a greater or lesser degree of fidelity where the message encapsulates information that is the cognitive equivalent of input data that is processed (the symbols are manipulated) before being outputted as behavioural responses. This is what gives the traditional model of cognition its colloquial metaphor of the Computational Theory of Mind (CTM).

Because the CTM is inadequate to account for complexity, this chapter introduces an alternate approach to cognitive science based on the Santiago school of the biology of cognition (Varela, Thompson, and Rosch, 1991). This approach, in its mature form termed enactive cognitive science, dispenses with the notion of representationalist thinking, where thinking is described as symbolic manipulation, in favour of an embodied engagement with the world that is realised, in real time, through the actor's engagement. One of the primary architects of the approach, Francisco Varela, describes this metaphorically by referring to a Spanish poem that translates as 'laying a path while walking'.

Enactive cognition has not been recruited for community-based sustainability research before. This may, in part, be due to the distinctiveness of the approach and that the source of writings have been described as

> "very difficult reading [with a] style [that] makes little concession to the reader [and] dense with ideas expressed with almost mathematical sparseness and uses many common words […] in very precise but uncommon ways" (Mingers, 1995: 2)

Therefore a relatively detailed and careful exposition is warranted. This chapter will focus on introducing and discussing this body of literature, and will conclude with some high-level implications for CBS practice and research. This then informs the interpretation and discussion concerning the data described in the previous chapter.

6.3. Complexity and cognition:

By way of review, in Chapter 2, the evidence base for community-based sustainability (CBS) and international development projects was reviewed and found to be, in Ramalingam's (2013) words, “dismal”. This was thought to be down to a number of reasons, which are briefly rehearsed here.

The methods by which CBS projects attempt to elicit change were considered and found to be largely ineffective, primarily because of the countervailing influence of a multitude of extraneous – or third variable – drivers. In addition, there are no universally acceptable indicators because, for the most part, sustainability is a contested issue and there are a multiplicity of local perspectives to be accounted for in any effort to elicit change and to maintain that which communities wish to sustain.

The experiences of using monitoring and evaluation (M&E) frameworks by front-line CBS practitioners were considered. By and large, despite some concerns about how outcomes and impacts might be used negatively, practitioners seem to endorse being able to evidence the impacts of their work. However, it is apparent that many practitioners face resource, capacity, and skill deficits to satisfy the burden of evidence expected of robust M&E frameworks (Hobson, Hamilton and Mayne, 2014; Hobson, Mayne and Hamilton, 2016), and that quantitative measures are only as good as the data they rely on (Dahl, 2012). This poses considerable challenges if the aspiration is for localised CBS practices to demonstrate interventions that can be scaled up to effect more widespread shifts towards sustainability (Seyfang and Smith, 2007; Seyfang *et al.*, 2014).

While the debate about M&E frameworks and the capacity to service these adequately continues unabated, and while the question about how to evidence impacts attributable to specific intervention continues to haunt projects

like CBS and international developmental aid initiatives (Gertler *et al.*, 2011; Thomas, 2015), an alternate perspective was considered. This perspective proposes that the challenge to evidencing impacts might be due to an incommensurability between the nature of the systems being addressed and the design or planning inherent to the interventions. This was construed as a clash between two different epistemological paradigms, and that the failure of both international development and CBS projects to evidence meaningful results may be a consequence of linear and reductionist solutions being applied to complexity problems (Burns and Worsley, 2015). As Burns explains in a passage worth citing in full:

> "It is typical of top-down policy making and 'best practice' models of policy implementation, where evidence is gathered, a 'solution' to a problem is developed, and it is then 'rolled out'. Unfortunately, when it interacts with the complexity of local circumstances, it does not behave in the way that was predicted. In 'complex governance environments', where many things are happening at the same time, interacting with each other, and simultaneously impacting on each other, simple explanations are very difficult to find" (Burns, 2010: 29).

It is evident that the emerging complex systems and post-normal scientific paradigms raise a number of provocative challenges about constructs that are ordinarily taken for granted. For example, what is meant by 'reality', and how one knows the world in order to make sense of it. How one understands the nature of the world shapes what is proposed as a solution to problems (Fazey, 2010; Hukkinen, 2012, 2014; Mowles, 2014), which is the point being made in social movements research with the concepts of diagnostic and prognostic framing (Snow *et al.*, 1986; Benford and Snow, 2000).

There is an emerging tendency to recognise that how the world is framed shapes the nature of the solutions that are applied to perceived problems. However, to date, there have been few attempts to wed recent developments in cognitive science that are predicated on an embodied complex dynamic

systems perspective to understanding how CBS (community-based sustainability) actors generate and utilise meaningful knowledge with respect to monitoring and evaluating any impacts attributed to their interventions. Moreover, because evaluation is generally concerned with determining evidence in support of decision making, for example, whether or not to extend funding for a given project, it is seemingly less interested in more qualitative measures such as the degree of project learning that has been accrued, even when such learning may be crucial with respect to how that project navigates and responds to problems it encounters (Patton, 2011; Dunkley and Franklin, 2017). Project learning as an asset tends to be overlooked by traditional M&E.

In order to begin to bridge the gap between the utilisation of cognitive science and evaluation to advance the present research agenda to explore how a CBS initiative becomes a system of learning about what works to elicit changes associated with sustainability, this chapter introduces a theory of cognitive science that sidesteps the Cartesian dualism between mind and matter, and draws on a post-Newtonian epistemology. This account positions cognition as skilful, embodied know-how in the context of situated action. From this perspective, “intelligence ceases to be the capacity to solve a problem and becomes the capacity to enter a shared world of meaning” (Bopry, 2001: 56). This bridging aligns cognitive science with second-order cybernetics and post-normal, or complexity, science, which tends to be characterised by emergent phenomena, non-linear causality, a multiplicity of perspectives, adaptive and responsive elements, recursive influences and mutuality, uncertainty, and dynamic co-evolution (Briggs and Peat, 1989; Kauffman, 1990; Lewin, 1992; Waldrop, 1992; Coveney and Highfield, 1995; Wheeler, 2006; Mitchell, 2009; Allen, 2010).

Complexity science construes a world as suffused with a multiplicity of meanings. Therefore, the enactive approach that repositions intelligence in the manner Bopry describes seems to be an appropriate response to what Burns

and Worseley (2015) identify as the source for the deficit in project performance evidence arising from the use of linear solutions design applied to complex challenges. Through adopting the enactive paradigm, how practitioners contend with the complexity of multiple perspectives, vested interests, values, processes of continuous change and non-linear causality become key components of a developmental evaluation framework to reflect the sense-making and learning of CBS practitioners immersed in their domain of operation.

The present chapter introduces an account of enactive cognitive science (Varela, Thompson and Rosch, 1991; Di Paolo, Rohde and De Jaegher, 2010; De Jaegher, 2013; McGann, De Jaegher and Di Paolo, 2013; Andringa, Van Den Bosch and Wijermans, 2015) and its roots in the biology of cognition (Maturana, 1978; Maturana and Varela, 1980; Lyon, 2004). To do so however, it is worth providing a potted history of cognitive science in order to delineate the significance of the enactive paradigm, as the so-called third wave.

6.4. A brief history of cognitive science:

The topic area now collected under the rubric of 'cognitive science' has long since been a preoccupation of philosophers, psychologists, sociologists, and even some quantum physicists. Its history can be traced across three main approaches to understanding mind and cognition. Although there are several hybrid theories and approaches, for the purposes of clarity and brevity, only the three primary approaches are considered here.

The history of ideas rarely follows clear-cut beginnings and endings, but rather is characterised by shifting constellations among converging interests and the waxing and waning in the popular articulation of metaphors (Baumer, 1977), or what Foucault – among others – would refer to as ‘discourses’ which come into and out of favour (Foucault, 1980; Lyotard, 1984; Deleuze, 1988a). The history of cognitive science can be read as following a similar trajectory, but

having converged around a centralising metaphor of computers in the 1950s, this is generally regarded as its starting point, and is seen as a revolt against the then prevailing doctrine of behaviourism.

This nascent study of the mind and its processes, termed 'cognitivism', described the activities of the brain and cognitive faculties with reference to, initially, switchboards, with multiple inputs and outputs, and the complex switching systems that channelled information from one region of the brain to another as a set of instructions that directed the body how to act (Posner, 1991).

With the advances in technology, the switchboard metaphor was replaced with a computer, although the basic functional mechanics remained the same, and representations were thought to be symbols that were computed, much like text symbols can be computed in modern day programming languages. As a result, this gave rise to the still influential model of the cognition as the computational theory of mind (CTM).

The model is quite straightforward: the world is construed as a perceptually rich series of informational inputs that enter the brain via sensory receptors and are processed internally. These processes are then behaviourally expressed in a series of outputs (e.g., Fodor and Pylyshyn, 1988). Psychiatric practices drawing on this metaphor construed 'disease' as a functional deficit in the processing systems of the brain, with treatment being the equivalent to that of a technical intervention, involving methods such as electro-convulsive therapy, lobotomisation, neurosurgery, and, although not as well developed but less intrusive, pharmaceutical regimens. Each of these treatments shared in common the 'correction' of what were seen as, effectively, faults in the way that the 'wet-ware' of the brain processed information.

The second wave of cognitive science, called connectionism, emerged during the early 1980s. The dominant metaphor for the mind and cognitive functioning was distributed neural networks, and this approach emphasised a description of intelligence as perceptual pattern recognition, in response to the model of inductive reasoning that had previously been favoured by the cognitivist approach (e.g., Smolensky, 1988).

Despite the change in metaphor, connectionism only enlarged but did not significantly challenge the dominance of the CTM model. Connectionism evolved as a challenge to the descriptions of computation (i.e., as located within the skull) and representation offered by cognitivism, proposing instead that representations are sub-symbolic and that thinking involves the assembly of these sub-symbolic patterns into meta-patterns.

The third approach to cognitive science emerged in the late 1980s to early 1990s, and construes cognition as an embodied dynamic system, adopting a critical perspective to the two previous approaches on the basis that neither cognitivism nor connectionism questioned the relation between the world and cognitive processes.

The two previous accounts of cognition retained the Cartesian model that treated mind and body as separate and independent systems, and posited that the external world was reflected by representational models located inside one's head. This third approach is rooted in dynamic systems theory, and focuses on self-organising systems as opposed to physical symbolic systems, positing that cognition emerges from sensorimotor interactions involving the environment, the body, and the brain in continuous non-linear and recursive causal activities. This model of cognition as an embodied dynamic system forms the foundation for enactive cognitive science (Varela, Thompson and Rosch, 1991; Thompson, 2007).

Unlike the earlier accounts of cognition, the Cartesian divide is circumnavigated entirely by the embodied dynamic systems account: the mind is an embodied dynamic system that exists in the world, not as some epiphenomena in the brain. Nor does it traffic in representations: information is no longer regarded as inputs that require processing (Scoones *et al.*, 2007). According to the dynamic systems perspective, a system consists of multiple state conditions and equilibria (Davidson-Hunt and Berkes, 2000), the sum of which constitutes that system's state or phase space, which are subject to perturbations from the environment.

Once perturbed (or irritated), a dynamic system initiates compensatory processes to maintain its homoeostasis around basins of attraction, that is, it self-organises (Powell and Bradford, 2000). This is obviously a far cry from previous generations of cognitive science which described cognition as an activity based on input stimuli, interpreted as information in the form of a set of representational, symbolic instructions, and acted upon in a linear process causal loop.

The primary difference that separates this third wave of cognitive science from its predecessors is that embodied dynamic systems theory incorporates an autonomous mode of organisation, rather than the subscription to a heteronomous[45] form of organisation that characterised both cognitivism and connectionism. The latter form of organisation is characterised by external sources of control and flows of information that drive a system in terms of a series of input-output relations, and which tend to be linear in nature (Thompson, 2007).

The main differences among these three generations of cognitive science are summarised in Table 6.1., below.

45 That is, the organisation is self or auto-generated, not shaped by outside or other (hetero-) forces or pressures.

	Cognitivism	Connectionism	Enactivism
Metaphor for mind	Digital computer	Parallel distributed network	Inseparable from experience and world
Metaphor for cognition	Symbol processing	Emergence of global states	Ongoing interaction within the medium
The world in relation to us	Separate, Objective, Representable in symbols	Separate, Objective, Representable in patterns of network activation	Engaged, Brought forth, Presentable through action
Mind vs. Body/ World	Separable, Cartesian dualism (mind and body incommensurable)	Separable, Epiphenomenal dualism (mind related to body and world via emergence)	Inseparable, Phenomenology (mind and world enacted in history of interactions)
What is cognition?	"Information processing as symbolic computation – rule-based manipulation of symbols"	"The emergence of global states in a network of simple components"	"Enaction is a history of structural coupling[46] that brings forth a world"
How does cognition work?	"Through any device that can support and manipulate discrete functional elements – the symbol. The system interacts with the symbols […], not their meanings"	"Through rules for individual operation and rules for changes in the connectivity among elements"	"Through a network consisting of multiple levels of interconnected, sensori-motor subnetworks"

Table 6.1. Comparison of three generations of cognitive science (Source: Varela, Thompson, and Rosch, 1991: 7, 42, 99, 206)

This represents a radical break between the third wave and the first and second generation cognitive science approaches. The third wave posits that the organisational processes of cognitive systems are *compensatory dynamics* of the system maintaining its homoeostasis, *not responses to stimuli from the environment* within which the system is located. By positing 'minds'[47] as autonomous, embodied dynamic systems, the third generation of cognitive science sidesteps the Cartesian dualism of body and mind, subverts the positivist paradigm of linear causality, and locates itself within an epistemology of complex adaptive systems and post-normal science.

46 The concept of structural coupling will be discussed in section 6.5.2. in this chapter.
47 This term is used very loosely here.

The remainder of this chapter elaborates on the key ideas associated with enactive cognitive theory.

6.5. Enaction: An introduction to the biology of cognition

The formal origins of enactive cognitive science coincide with the publication of *The embodied mind* (Varela, Thompson and Rosch, 1991). It is widely regarded as a pivotal text in cognitive science (Combs *et al.*, 2002; Krippendorff, 2002). Not only does it outline an alternative to the computational theory of mind (CTM) which had, hitherto, been the dominant cognitive scientific paradigm, and which underpins most of academic psychology even today; it also bridges embodied dynamic systems theory and phenomenology by developing an account of first person (subjective) experience, while incorporating a strong influence from the Buddhist literature on consciousness studies (Petitmengin, 2009).

The intellectual roots[48] that inform and shape the enactive account of cognition can be traced to the biological research conducted by Maturana in Santiago, Chile, during the 1950s and 1960s on amphibian and avian perception (Lettvin *et al.*, 1959). A key tenet of autonomous dynamic systems is reflected in Maturana's research into colour perception in pigeons, when he determined that colour perception is not a function or effect of the light spectrum. Instead, colour perception is a process through which

> "an activity is initiated that is enclosed in the structure of the retina itself (and not in the structure of the source of light, nor in the structure of the world). The external world can only trigger such changes in the nervous system of an organism as are

48 Due to the closely intertwined history of enactivism and autopoietic (self-producing systems) theory, for simplicity's sake, reference will only be made to enactivism, even though much of the foundations of enactivism can be traced to autopoietic theory and the biology of cognition.

> determined by the structure of the nervous system itself" (Maturana and Poerksen, 2004: 61).

This account refutes the input-output model of the computational and connectionist theories of mind predicated on internalised (symbolic) representations of the external environment. The enactive account proposes, instead, an autonomous self-organising perceptual activity, arguing that perception is congruent with the system's own structurally determined, homoeostatic, state conditions.

Although Maturana does not refer to this, such a proposition is not too dissimilar from the notion of *Umwelt* put forward in the 1920s by von Uexküll. This notion suggested that each organism exists in a world-environment that is specific to it. While there may be some degree of overlap, the world within which a bee persists is very different to that encountered by a fly, and both to that of a moth (von Uexküll, 1982, 1992).

The paradigmatic case used to illustrate this is the common tick. The tick exists in a world-environment composed entirely and exclusively of three dimensions, or, in dynamic systems terms, attractors. The tick climbs towards the light, and upon reaching the highest point that it can, it waits indefinitely until it is triggered. The duration of this wait can extend to several years, and will only end when the tick detects butyric acid (sweat) from a passing mammal. This trigger – and only this trigger – elicits from the tick a compensatory response by which it releases itself from its perch to fall upon the mammal. Once it lands upon a mammal, the tick acts in a way that compensates for the changes in state by burrowing towards the warmth of the animals skin, whereupon it feeds until it is engorged and falls off (von Uexküll, 1992; Buchanan, 2008).

The point is that with the theories of the *Umwelt* and autonomous dynamic systems, specifically as explicated by enactivism, one of the characteristics of complexity, that of a multiplicity of perspectives is readily

accounted for: there are multiple perspectives as a result of every organism interacting with, from their perspective, *different* worlds. Hence the title of von Uexküll's key work on theoretical biology is "A stroll through the *worlds of animals and men*" (von Uexküll, 1992), which already suggests that animals and humans occupy different, albeit intersecting, worlds.

That there are similarities across the different perspectives is due to each species being organisationally similar, which specifies them as a member of a particular class of organism, such as a starfish, a dog, or a human. Because each member of a species shares a common organisation, they will perceive the world in broadly comparable ways. As will be explained in greater detail below, in humans, the coordination of these multiple mappings of the world takes place in language. The implications of this are profound, and already begin to undermine the validity of positivist claims that human cognition orients around a singular objective reality.

6.5.1. Organisation and structure:

Two fundamental attributes of systems permeate the works of Maturana and Varela and warrant a brief explanation given the prominence they occupy, and how they underpin the more advanced theoretical developments. Both terms are understood in quite technical ways, and these are based on the assertion that systems are not adequately defined by simply listing a set of properties or constituent elements.

The concept of organisation, as used by Maturana and Varela, concerns those system attributes that identify it as a member of a specific class of system. For example, a member of the class human is a bipedal organism, with opposable thumbs, and forward-facing eyes. A member of the class of systems of kettle are those systems that contain and heat water internally.

On the other hand, a system's structure is that which differentiates it in its specificity – it concerns its individuality as an entity in a given moment in time, that is, a specific human, a specific kettle. Its organisation concerns its membership in a class of entities, while its structure is its unique embodiment in time.

There is a traditional philosophical problem that helps illustrate these two concepts called *the ship of Theseus.* This concerns persistence of identity over time and change. The problem is given in the case of a wooden ship that, over time, undergoes the removal of old boards which are replaced with new wood. The puzzle then is whether the ship belonging to Theseus is still the same ship once all of the old (original) boards have been replaced with newer boards. In other words, and put more formally, over time how is a system's identity maintained despite successive deformations?

For Maturana and Varela, this puzzle may be resolved by considering a system's organisation, which concerns its membership as representative of a given type or class of system and is the set of defining relationships among the system's components. These relations must exist for it to be a member of the class to which it belongs, and therefore constitutes that system's identity as a specific type of system – in this instance, a ship belonging to Theseus. As long as the relationships among the new boards preserves the original set of relationships among the original boards, the ship retains its original identity.

Structure, on the other hand, denotes the components and the set of relationships that exists among those components in this specific case of the system (Maturana and Varela, 1992). Whereas organisation refers to a system in general, the class or species, etc., structure is the individual instance or unique case of that general class. Structure describes that individual while organisation is the class to which it belongs as a member. With respect to the ship of Theseus problem, the structure of the ship is replaceable: the boards

could be replaced with steel girders or *papier mâché* and while its structure has changed, the organisation has not. Of course, attempting to sail in a *papier mâché* boat will be less than practical, but this does not change the organisational coherence of the system. However, because of the nature of the structural changes, wooden boards replaced by *papier mâché*, the ship will collapse and this will destroy the ship's organisational coherence.

Therefore, by differentiating between a system's organisation and its structure, a system can be adequately described as undergoing change without loss of identity if, and only if, its organisation is maintained (Maturana and Varela, 1992). Autopoiesis (the cellular process of self-production) – and autonomy – are both modes of a system's organisation, and autopoiesis itself is a specific member of that class of autonomous systems.

6.5.2. Structure determinism and structural coupling:

The principle of structure determinism concerns individual cases, members of a general class, and explicates the principle of autonomy. The principle claims that changes in a system are determined, controlled or driven, by the sum of its components and the relations among those components, and not by any direct environmental influence.

In other words, the range of a system's behaviour is constrained by how it is composed. Reflecting back on the *Umwelt* of von Uexküll's paradigmatic tick, because the structure of the tick affords only the three basins of attraction, the totality of the tick's behavioural range can be summed up in those three movements, or capacities.

There is an interesting parallel here between the principle of structure determinism and Spinoza's *affectus.* Spinoza, a critic of Descartes, proposed that the passions or feelings compel one to behave in certain ways. Affects (or the passions) “follow from the same necessity and force of Nature as all other

particular things" (Spinoza, 1992: 103). Spinoza goes on to write in the *Scholium* to Proposition 9 that

> "we do not endeavor, will, seek after or desire because we judge a thing to be good. On the contrary, we judge a thing to be good because we endeavor, will, seek after and desire it" (Spinoza, 1992: 109).

For Spinoza, an organism is defined by what it is capable of, its capacities. Spinoza goes so far as to suggest that we do not know a body (an entity or system, in modern parlance), until we know what it is capable of (Deleuze, 1988b: 124): "You will define an animal, or a human being, not by its form, its organs, and its functions, and not as a subject either; you will define it by the affects of which it is capable". Obviously, in the mid-17th Century Spinoza lacked the modern vocabulary to describe complex dynamic systems, and yet, his words express very similar ideas[49] to the modern concepts of autonomy and structure determinism.

Change in a system is the effect of compensatory behaviour as it returns towards homoeostasis following a perturbation originating in the system's environment. While a medium may perturb a unity, thereby triggering a change in state, what changes is only ever a function of how the system is organised and structured. The trigger may be environmental, but the corresponding compensation is determined by the structure of the organism and its state conditions of homoeostasis, hence the notion of structure determinism.

In light of the foregoing, the question may be legitimately raised concerning how organisms relate to (that is, adapt relative to) the environmental media within which they are embedded. Enactive Theory accounts for this with

49 Although at a tangent to the present work, Spinoza's (1992) *Ethics* could be fruitfully read as a precursor to modern systems thought, because a surprising number of his key concepts find resonance in modern complex systems theories in terms of his accounts of holism, attributes, his concept of *conatus*, and so on.

reference to structural coupling, the main explanatory construct to address interactions among systems.

In essence, structural coupling refers to the history of recurrent interactions among a unity and its medium (Maturana and Varela, 1980, 1992). One of the parallels in Enactive Theory and the dynamics of complex systems is that the property of co-evolution and co-adaptation is accounted for by the principle of structural coupling, because the coupling involves the mutual and recursive perturbation: the unity is perturbed by its medium, but the unity simultaneously perturbates its medium in the process.

An analogy is buying a new pair of shoes: at first, the shoe may be too tight, and perhaps rubs one's foot resulting in a blister: the shoe has perturbed the foot. However, the foot also stretches the shoe, that is, the foot recursively perturbates the shoe. Over time, the shoe rubs one's foot less, and one's foot stretches the shoe less, until a point of comfort is reached. This point of comfort is the history of recursive and mutual couplings in the ontogeny of the foot and shoe interaction.

Structural coupling between a unity and its medium involves the same kind of process of recursive deformation which, assuming that the organisation of both the unity and its medium is conserved, leads to a mutual fitting.

This can be illustrated as per Figure 6.1., below, which portrays the process of structural coupling over time. At time sequence t_0, the unity (organism) given by the closed circle (which represents the unity's conservation of autonomy via its organisational closure) interacts with the medium. The two-directional arrow indicates that while the unity is influenced (triggered or perturbated) by its medium, the medium is also simultaneously triggered (deformed) by the compensatory processes of the unity. Influence is reciprocal, not unilateral.

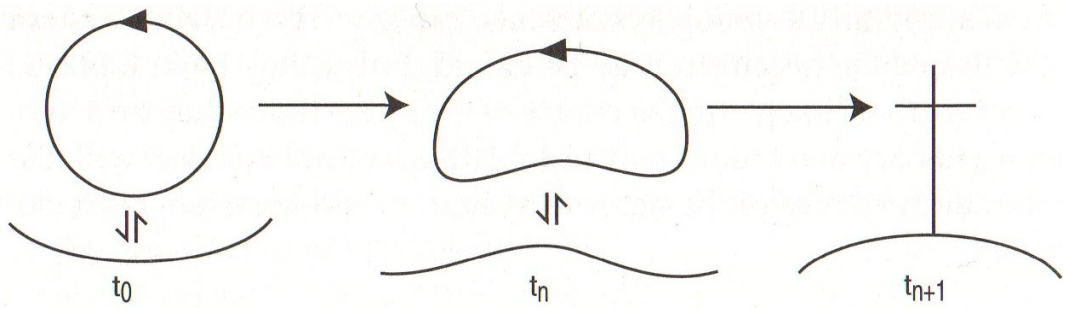


Figure 6.1. Structural Coupling (Source: Maturana and Poerksen, 2004: 86)

At time sequence t_n, the unity and the medium are mutually and recursively structurally coupled. This would be the ontogeny of the coupled system. To refer back to the foot and shoe example, the shoe has stretched to take the foot, and the foot has accommodated to the constraints of the shoe. Finally, at time t_{n+1}, the unity dies when the structural coupling is lost.

But because structural coupling pertains to the emergent and continuous relationship between organisms and the media within which they operate and conserve their organisation, the participating systems are reciprocal sources of disturbance for the other. This means that each participatory system is engaged in a process of reciprocating compensations for the sequences of disturbance triggered by each system as it compensates for perturbations, and, in the process, triggers a further sequence of perturbations. This becomes an on-going loop of reciprocating compensations that trigger further compensations, in a rapid escalation of complex cause and effects that can no longer be adequately accounted for by means of linear and reductionist descriptions.

In this account of interaction, no information has passed any boundary – the system is open to energy and material flows, even though it is operationally

or organisationally closed as an autonomous system – nor is there any need to suppose some kind of ephemeral force or influence.

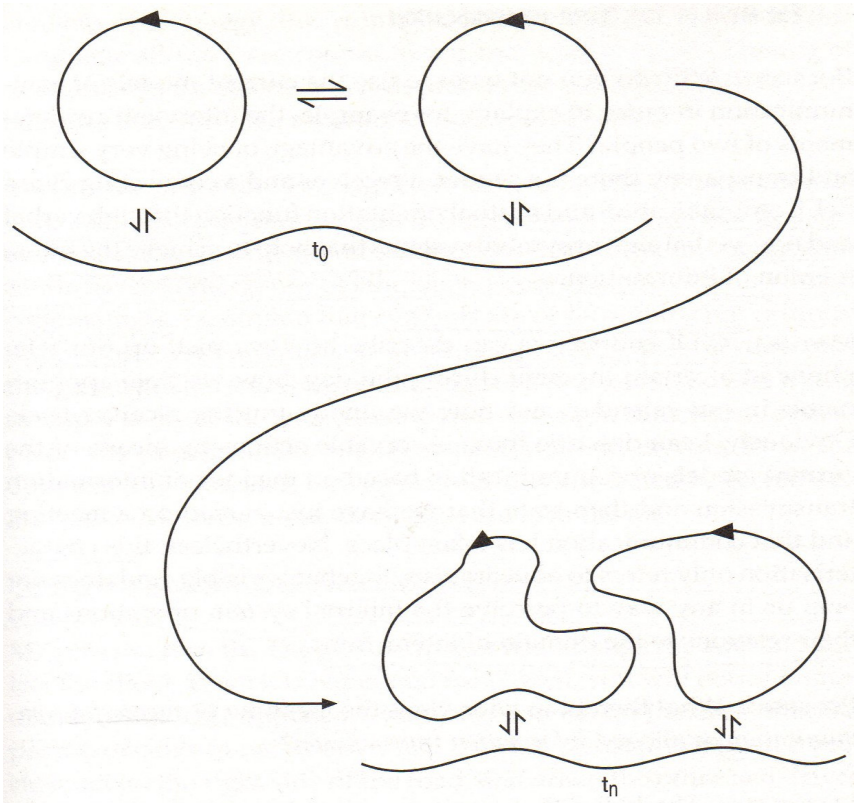


Figure. 6.2. Structural coupling between two unities and a medium, giving rise to a linguistic domain. (Source: Maturana and Poerksen, 2004: 87)

In Figure 6.2., above, the structural coupling between two unities (organisms) and a common medium is shown as a process across two sequences of time. At time t_0, the unities and medium interact, and through the processes of mutual and recursive influence, by time t_n, both unities and medium are ontogenically coupled, sharing a history of interactions which gives rise to a linguistic domain, which is the ontogeny or history of the interactive couplings among organisms. This is the focus of the next section.

6.5.3. Linguistic domains and languaging:

Emerging as a 'higher order' (from the perspective of an observer) from the shared historical dance or sequence of reciprocal and mutually triggering interactions (i.e., structural coupling, which generates ontogeny), two or more organisms become a medium for each other to realise their respective autopoiesis (self-production and conservation of autonomy).

However, the specifics of the behaviours are arbitrary – the only condition is that they "operate as triggering perturbations in the interaction" becoming contexts for the other, "because their participation in the interlocked interactions of the domain is defined only with respect to the interactions that constitute the domain" (Maturana, 1978: 47). This pattern of interlocked interactions, like a dance, constitutes what Maturana terms a consensual domain (Maturana, 1999). The consensual domain is the primary operation that gives rise to what he terms a "linguistic domain". The linguistic domain does not equate to language, but is the repeated patterns of interactions among two or more organisms. Among ants, the linguistic domain is manifest as *trophallaxis*, an exchange of chemical markers in the coordination of their mutual coupling within the medium brought forth through the sensorimotor capacities of the ant.

Linguistic, in this sense is not yet language, but is – in humans, the precursor, the necessary conditions by which language comes into being. Linguistic behaviour is that which comes about "through the co-ontogenic coordination of [...] actions" (Maturana and Varela, 1992: 209). In a concrete sense, linguistic behaviours are social, because they arise from an ontogenic history of the structural couplings that take place between two or more organisms. Because the patterns of interaction that constitute a linguistic domain become stabilised, these patterns are, in humans, distinctions drawn that are taken as things in themselves, as objects in their own right through convention. Language, in this model, is made possible as a result of these coordinations of patterned distinctions. Language is not a noun but a verb, and

languaging is the second-order coordinations of coordinations of distinctions. Language structures the world of complex and recursive references that describe how the world is differentiated.

If the emergence of the linguistic domain is socially generated, in the manner described above, so too is language. As Maturana and Varela (1992: 209-210. Original emphasis) put it: “In the flow of recurrent social interactions, language appears when the operations in a linguistic domain result in the coordinations of actions about actions that pertain to the linguistic domain *itself*”.

Language then is a meta-coordination of recurrent behaviours. This is a radical departure from the idea that language is the transmission of information. Rather it is the process by which reality, as a series of distinctions that only exist in language, are specified. For Maturana and Varela, we exist as humans only through language, and language is connotative, not denotative; it is a practical activity of coordination, not a medium for the exchange of information, meanings, or ideas (Mingers, 1995). Language does not convey; it coordinates.

The enactive perspective eschews any notion that language is a system involving symbolic communication. Symbols, in this view, are of secondary importance; in other words, language is the *origin* of symbols, not the other way around. Language does not involve words that represent things in the world, but is rather “a manner of living together in a flow of consensual coordinations of consensual coordinations of behaviour [and] we live in conversations in the braiding of languaging and emotioning” (Maturana and Verden-Zöller, 2008: 81). Consensuality refers not to consent but rather a process of coherent transformations, “a particular structural congruence that has evolved through a history of interaction” (Maturana and Poerksen, 2004: 89). Through language one participates in bringing forth – constituting – the world one lives in, with others.

Humans exist in a network of language, a network of conversations that give coherence and continuity to the world that is brought forth. As Spencer-Brown, in his calculus of signification observes:

> “a universe comes into being when a space is severed or taken apart. The skin of a living organism cuts off an outside from an inside. So does the circumference of a circle in a plane” and “you cannot indicate anything without defining two states, and you cannot define two states without creating three elements” (Spencer-Brown, 1973: xxix, ix).

Language involves drawing distinctions about distinctions culminating in a recursive proliferation of meta-distinctions and meta-meta-distinctions, and are a medium that trigger compensatory behaviours. This is because, as humans, we exist in this domain of distinctions, entering into agreements via the recursive coordination of coordinations of consensual behaviours. No information is transmitted; language is a set of coordinations about how each of us bring forth the world in accordance with the structure of our sensorimotor and perceptual architecture.

It is only because we, as humans, share structural similarities (i.e., can organisationally be classified as *Homo sapiens*) that we are able to participate in the reciprocal coordinations of the distinctions we bring forth in the conservation of our autonomy (organisational identity). This seems to offer a biological account in support of semiotics that depicts language as a set of instructions, specifically sign processes, involving, for example, 'order words', and the relative power differentials between *langue* and *parole* (Deleuze and Guattari, 1987; Deely, 1990; Lazzarato, 2014; Brier, 2015).

As will be discussed in the next section, cognition encompasses effective action in the (human) domain of languaging. This extends the account for the complexity of social systems as arising from the multiplicity of perspectives (speaking positions), as recognised explicitly in soft systems methodology

(Checkland and Scholes, 1990; Jackson, 2001; Mingers and White, 2010), and the surplus of meanings that are in circulation amongst participant stakeholders (Midgley, 2000; Ison, 2010; Paschen and Ison, 2014). Moreover, from an enactive perspective, the studies of distributed sense-making offered by, for example, Weick (Daft and Weick, 1984; Weick, 1987, 1991) may be reinterpreted as case studies of linguistic domains. So studies of coordinated thinking among the deck crew aboard aircraft carriers (Weick and Roberts, 1993) and in ship navigation (Hutchins, 1996) describe processes of linguistic *trophallaxis* in the structural coupling of actors within the contexts with which they realise themselves as actors, rather than the case originally ventured that purports a form of cognition that exists as distributed among actors, but as somehow outside of the actors themselves (Giere, 2007).

Because the actors in these case studies realise themselves as actors within the specific domain of a given profession, the languaging coordinates how that world is distinguished in a way that someone from outside that domain would experience as foreign. For an 'outsider' to become an 'insider', they must first learn the language – that is, how the 'insiders' distinguish the worlds with which they realise themselves as actors.

As will be seen later, this has significant implications for the notion of learning, but does provide support for the notion of communities of practice, where language is performative (Wenger, 2010). It also lays the groundwork for the next chapter in which the community-based sustainability (CBS) case study, the Sustainable Harborough Project (SHP), will be considered with respect to its capacity to be a learning system. In particular, how it realises itself as such through the generation of a learning environment within which stakeholders participate.

6.5.4. Cognition:

The biology of cognition proposes the deceptively simple description of cognition as effective[50] action within a specified domain. However, Maturana and Varela also go on to claim that this is true for all organisms, with or without a nervous system. This is a radical claim, and subverts the long established tradition of valuing humanity above other (so-called 'lesser') animals on the basis of humanity's cognitive capacities.. It is only relatively recently, for example, that animals and plants have been credited with cognitive capacities (e.g., Trewavas, 2003; Firn, 2004). The ethical implications of this claim are seismic, and mounts a challenge to the assumptions of Bacon and Newton, and even St Augustine of Hippo, who construed Nature as dumb, and to be bent to the will of Man. As many have argued, it was this claim of innate human superiority that may have given rise to the ecological crises we now call the Anthropocene (White, 1967; Ponting, 1993; Smith, 2001; Merchant, 2005).

In an early description of cognitive systems, Maturana (in Maturana and Varela, 1980: 13) writes that a

> "cognitive system is a system whose organization defines a domain of interactions in which it can act with relevance to the maintenance of itself, and the process of cognition is the actual (inductive) acting or behaving in this domain".

In other words, cognition does not concern thinking *per se*, but is the set of activities an organism undertakes to conserve its autonomy. The conservation of autonomy involves it addressing whatever is deficit or surplus with respect to maintaining its internal state conditions as a coupling with the medium within which it realises itself. One of the primary examples is the bacterium and its relation to sucrose. The significance of sucrose is generated entirely by the bacterium which can use it as a food source. However, for those organisms that

50 From the perspective of the biology of cognition, 'effective' refers simply to whether or not that action contributes to the unity's autopoiesis and conservation of autonomy. In third order couplings, with the proliferation of abstract concepts, language becomes the medium for effective action.

do not use sucrose, the sucrose is ‘invisible’ or inconsequential. The difference between the organism and the environment is a surplus of signification.

Therefore, significance is the use value attributed to the world through the organism's activities to maintain itself. One may recall the paradigmatic tick with only three capacities – crawl towards a light source, release when encountering butyric acid, burrow towards the warmth – but is completely oblivious to all other aspects of the world that we as humans might distinguish, be these vehicles going by, economic crises, and musical refrains. The tick only responds to one of these three triggers, because these are all that are significant in its conservation of its autonomy. Significance then is structurally determined, and the tick’s cognition is its ability to conserve its autonomy within the domain it realises itself in.

The attribution of significance by the organism raises some interesting issues for humans. As discussed in the previous section on languaging, the linguistic domain and languaging in particular are also the media with which humans structurally couple in the realisation of their autopoiesis and conservation of autonomy. When the multiplicity of terms, social cues, along with the range of meanings are considered as constituents of the (social) medium, the significance attributed to these elements by any person is likely to vary considerably between persons. This is a further explanation for the complexity of working within social systems, with multiple perspectives, but also lends some support to the deconstructive approach of Derrida as per his emphasis on the notion of *différance* as the continuous deferral of (final) meaning (Derrida, 1978). The enactive construct of significance allows for a strong case to be made in support of the critical role semiotics plays in the discernment of meaning.

It is now evident that the enactive approach to cognition signals a radical break in the developmental trajectory of cognitive science as represented by the

cognitivism and connectionism schools of thought. Unlike the two previous approaches to cognitive science, the enactive view is that cognition is the organism's effective behaviour within its domain of interactions. The linguistic domain and the cognitive domain broadly intersect, and both constitute “the domain of all the interactions in which an autopoietic system can enter without loss of identity” (Maturana and Varela, 1980: 136). In other words, a cognitive domain can be any medium (put loosely, a social or ecological milieu) with which the organism can enter into interactions while conserving its autonomy.

As Maturana and Varela (1992: 244) put it, “human cognition as effective action pertains to the biological domain, but it is always lived in a cultural tradition”. This means that a person might enter into different social (that is, linguistic) media as long as, in doing so, their autonomy is not undermined. This has significant implications for eliciting change, and as will be discussed later, it requires a re-evaluation of how CBS initiatives approach engagement to trigger change (see section 6.7., below).

Because language is not the transmission of information, but a series of coordinating instructions, then instructional interactions (interactions that seek to change someone's way of behaving) are not successful on their own. They will only trigger in the listener changes commensurate with the range of compensatory behaviours the recipient already participates in during the course of realising her/ his autopoiesis. Those changes will be determined by the structure of the person, not by the content of the utterance. What is required is an alternate approach, termed 'orthogonal interactions' (Mendez, Coddou and Maturana, 1988; Efran, Lukens and Lukens, 1990).

Cognition, from the enactive perspective, does not mean engaging in any form of information processing of data attributed to reside 'in' an objective world. Cognition is relational, pertaining to the manner with which an organism interacts with the world it is structurally coupled, the world it brings forth – or

enacts – as a result of how the organism is structured (*sensu* von Uexküll's paradigmatic example of the tick, or Spinoza's capacities). Each world is unique therefore to each organism; information thought to be 'in' the world, as per the model of cognition as an information processing function, is to suppose that "such inputs or outputs are part of the definition of the system, as in the case of a computer or other machines that have been engineered" (Maturana and Varela, 1992: 169).

This account makes a strong case for understanding the multiple perspectives (different worlds) as well as the emergent properties (meta-distinctions and recursivity of coordinations in language) that characterise post-normal or complexity science. It is due to the consistent and integrated accounting of complexity that the biology of cognition offers that it is the more compelling theoretical lens for understanding the complex domains within which CBS and international developmental aid initiatives operate and maintain their autonomy (identity) as viable (cognitive) entities.

However, the elegance of the account comes at a cost, and that cost is that it necessitates that we must think differently about how such initiatives work, and how they can increase their efficacy within their operational domains. This will be considered later in this chapter. Prior to doing so however, the role of the observer in generating second-order[51] systems (the cybernetics of observing systems) warrants elaboration since this function is central to any description offered. As Maturana points out "Everything said is said by someone" (Maturana and Varela, 1992: 27) or, more bluntly, there is no "'view from nowhere" – of performing what Donna Harway calls 'the god [sic] trick'" (Code, 2006: 15).

51 Second-order systems are descriptions of a set of relationships bounded by an observer that include the observer within the field of description. It is the study of *observing* systems, not observed systems from which the observer is always absent from the account.

6.5.5. The observer and two explanatory paths:

In the enactive world view, there are no independent observers, no bird's eye view from nowhere. Observing, making knowledge claims, drawing distinctions, bringing forth a world are hence inherently political, and ethical, acts. To be clear, this approach is not claiming that the world is all made up. Enactivism does not succumb to solipsism, and even though it has been classified as an exposition of 'radical constructivism', this is not a term with which the two primary authors of autopoietic and enactive theory concur (Proulx, 2008). Nor, however, do they agree in the existence of an independent, or objective world, a real or final reality beyond (direct) human perception, akin to Plato's allegory of the cave.

What Maturana and Varela, and the many colleagues who have carried the biology of cognition forwards, *do* subscribe to is more complex, albeit deceptively simple to state. The world is, as far as they are concerned, the product of interaction between the organism and its medium. These are two sides of the same coin – that is, they are mutually specified (Maturana and Varela, 1992). They illustrate this third way with reference to the Homeric myth of the Odyssey which successfully charts a course between the *Charybdis* whirlpool (solipsism) and the *Scylla* monster (representationalism).

They explain the third way through an analogy of someone who has always lived in a submarine. As observers, we stand on the shoreline and watch the submariner gracefully navigating reefs and rocks, and radio the submariner to congratulate them on the skilful navigation of a difficult passage. The submariner responds in a confused manner, asking 'what reefs, what rocks? I merely handled some levers and switches to ensure that the relationships between indicators on my instrument panel were kept constant'. As Maturana and Varela (1992: 137) conclude this analogy, “[i]t is only for us on the outside, who see how relations change between the submarine and its environment, that the submarine's behavior exists and that it appears more or less adequate

according to the consequences involved". Behavioural intentionality and adequacy is contingent on the distinctions made by an observer (including the actor her/ himself), and nothing about any such qualities as inherent or intrinsic to the behaviour itself can be claimed.

In other words, the observer describes processes as being meaningful, such as the behaviour of an organism relative to its environment, but from the perspective of the observed organism all it is doing is engaging in compensatory measures to maintain homoeostasis – the submariner who is oblivious to the rocks and reefs and only maintains the internal (from the perspective of an observer) conditions of the craft.

In a recent paper, Maturana and colleagues provide a succinct and accessible account of what it means to say that something exists, positing that:

> "whenever we say that something *exists* or that it has *existence*, we shall mean that that something 'has presence' or 'that it occurs' as a result of what we do as we distinguish it, and that it arises into existence with the characteristics with which it arises determined by the operation of distinction with which we distinguished it, and, therefore, that it does not occur with independency of what we do as we distinguish it" (Maturana, Yáñez and Muñoz, 2015: n.p. Original emphases).

This is a restatement of the previous arguments that knower and known[52] mutually specify the other, or two sides of the same coin; that the *Umwelt* of an organism is determined by that organism's perception and biological architecture; that the world is brought forth, or enacted, in the act of drawing a distinction, as an organism in the process of living in the realisation of one's autopoiesis and the conservation of autonomy.

52 That is, unity plus medium (Maturana and Varela, 1992), or organism plus environment, as the unit of survival (Bateson, 1972). These terms each refer to the relationship between two nominally differentiated perspectives. The pivotal operation however, is that of distinction through which the world is brought forth, and through which one becomes two (Spencer-Brown, 1973).

From the foregoing quote, the enactive account neither allows, nor denies, an independent existence of a world. But, what the account *does* state is that it is in living that the world becomes known to us, and that it is we, in the course of living, that realise the world within which we live. In his later work Varela drew on a number of Buddhist ideas in his exploration of first person consciousness and Buddhist practices of mindful meditation (Varela, Thompson and Rosch, 1991; Varela, 1992; Thompson, 2007). One of the ideas in Buddhist thought that is congruent with the enactive account of bringing forth the world through the process of living it, is the principle of *paṭicca samuppāda*, or dependent co-arising, or mutual causality (Macy, 1991), expressed simply as "cause and effect are one" (Humphreys, 1962: 19). Varela, citing the words of Spanish poet, Antonio Machado, likened this process of mutual causality, of bringing forth the world in the course of living, as one in which one lays down a path in walking[53] (Varela, 1987). This is illustrated in Figure 6.3., below:

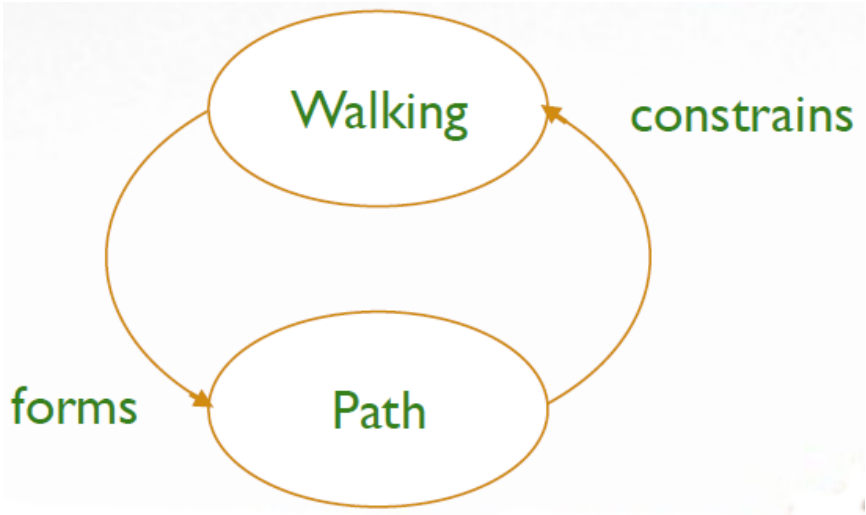


Figure 6.3. Mutual specification of path and walking
(Source: Di Paolo, n.d.: http://www.unitt.de/eip/doc/Ezequiel_Di_Paolo.pdf Accessed: July 21, 2016)

53 The poem itself reads, in English: "Wanderer, the road is your footsteps, nothing else; wanderer, there is no pain, you lay down a path in walking. In walking you lay down a path/ and when turning around you see the road you'll never step on again. Wanderer, path there is none, only tracks on ocean foam" (Varela, 1987: 63).

For Maturana and Varela then, the usual philosophical cleavage of the field into ontology (as the study of being, including that of matter and the conditions of existence) and epistemology (as the study of knowing and how one knows, including the content of what can be known) is arbitrary. The walking forms the path, which influences what can be walked, as per Figure 6.3., above.

It is the observer who, in language, draws the distinction between being and knowing, who attributes meanings to sequences of activities organisms engage in in the realisation of their autopoiesis and the conservation of their autonomy relative to the medium within which they realise these, including the medium of other multi-cellulars (such as other people) and the medium of cultural traditions, such as language. That we forget this is because, as Maturana writes, “we do not see ourselves growing into [language]: we are already observers by being in language when we begin as observers to reflect upon language and the condition of being observers”. He continues by way of summation: “whatever takes place in the praxis of living of the observer takes place as distinctions in language through languaging, and this is all that he or she can do as such” (Maturana, 1988a: 9).

This perspective has obvious ramifications for how one generates explanations, and Maturana develops an argument that maps out two explanatory paths which take the immersion of an observer in language into account. This is developed most fully in his nearly sixty page article in the special issue of the *Irish Journal of Psychology.* The basic thrust of his argument is that there are two explanatory paths, the first what he calls the path of 'objectivity-without-parentheses', or “the path of transcendental objectivity”, and the path of 'objectivity-in-parentheses', or the “path of constituted objectivity” (Maturana, 1988b: 28). These two explanatory pathways will be briefly discussed, although, by now, the second path of constituted objectivity will likely be already familiar, as this is the explanatory pathway that is

congruent with the enactive approach, and is consistent with the second-order cybernetic approach that incorporates the observer into any description of an observed system (Pask, 1996; von Foerster and Broecker, 2010; Pangaro, 2011).

There is an assumption that science and scientific explanations are descriptions of an objective (or transcendent) reality. Scientific endeavour seeks to calibrate our perception and understanding of this external reality. Such scientific explanation illustrates what Maturana terms objectivity-without-parentheses. However, Maturana, as a scientist, does not subscribe to the common notion of objective scientific explanations, but instead offers that "scientific explanations do not reveal or connote an independent reality, but operate by showing the conditions of constitution of that which they explain" (Maturana, 1991: 386). In the course of a scientist offering a "scientific explanation, they propose a generative mechanism that would give rise to the experience to be explained as a result of its operation in the domain of experiences of a standard observer" (Maturana, 1991: 385).

In other words, a scientific explanation is an explanation that satisfies a question according to a set of criteria that those who participate in the scientific (language) community accept as scientific. This accounts both for the historically more esoteric scientific explanations, such as miasma or phrenology, as well as for the seismic shifts in scientific paradigms (Kuhn, 1970) on the same basis: i.e., what the participants come to accept as valid criteria for a scientific explanation have themselves changed over time. Even scientific explanations then do not make a special exemption for a transcendent objectivity.

An explanatory pathway claiming a transcendental objectivity involves a blindness to the constitutive participation of the observer to that which is being observed. By engaging in this blindness, explanations that follow the

transcendent objectivity pathway “entail the claim of a privileged access to an objective reality by the explaining observer”, and because the explainer does not assume any responsibility for consequence of their explanations, assuming that the validity of such does not depend on them as explaining observers, explanations that follow this path express “a claim of knowledge [that] is a demand for obedience” (Maturana, 1988b: 29).

The enactive approach makes room for, and generates a bottom-up (from uni-cellular, molecular autopoiesis, to multi-cellular human organisms, and the generation of cultural traditions through language) account of Foucault's celebrated analysis of the constitutive effects of knowledge/ power continuously realised *in situ* and in real time through a multiplicity of nodes in a discursive network (Foucault, 1980). As Deleuze (1988: 25) writes of Foucault's concept of power:

> “[power] is exercised rather than possessed; it is not the 'privilege', acquired or preserved, of the dominant class, but the overall effect of its strategic positions. […] In brief, power is not homogeneous but can be defined only by the particular points through which it passes”.

The demand for obedience to knowledge claims originating from a blindness to the constitutive effects of the observer, the discursive points through which power passes as an always anonymous, pre-personal claim to truth, both share in common what Maturana has described as an explanatory path of objectivity-without-parentheses, the consequences for which no-one is ever responsible.

6.6. Enactive cognition: An overview:

Having provided an introduction to the key terminology of enactive cognition’s autopoietic theoretical roots, albeit briefly and excluding much of the nuance and complexity, this section introduces the main arguments of enactive cognitive science. While the preceding pages have outlined how the biology of

cognition – that is, autopoietic theory – provides an elaborate, and tightly reasoned account of the (biological) mechanisms that give rise to cognitive processes, what has not been documented so far is the observing system's phenomenology. Doing so necessitates a shift in focus from the theoretical base shared by both autopoietic and enactive theory, to the interactions through which the observer's own lived experience is realised.

Varela, in his elaboration of enactivism, emphasised the role of autonomy, claiming that all systems are autonomous, while only some are autopoietic. By introducing this distinction, Varela's post-Maturana work is better positioned than autopoietic theory to allow for a theory of social or participatory sense-making.

6.6.1. Enactive cognitive science: What is cognition?

Varela summarises the basic thrust of the enactive take on cognition:

> "the enactive approach underscores the importance of two interrelated points: (1) that perception consists of perceptually guided action; and (2) that cognitive structures emerge from the recurrent sensorimotor patterns that enable action to be perceptually guided" (Varela, 1999: 12).

He (1999:12-13) continues:

> "the reference point for understanding perception is no longer a pre-given, perceiver-independent world, but rather the sensorimotor structure of the cognitive agent, the way in which the nervous system links sensory and motor surfaces"

With a declaration that echoes von Uexküll's concept of *Umwelt*, some seventy years previously, Varela proposes that the sensorimotor structure "determines how the perceiver can act and be modulated by environmental events", because "what *counts* as a relevant world is inseparable from the structure of

the perceiver" (1999: 13). This links enaction with the theory of structure determinism, introduced previously.

Enactivism, as a theory of cognition, "revolves around animal processes of meaning formation that at root are organism-centred, environment-specific, and goal-directed" (Cappuccio and Froese, 2014: 5), such that what is significant and meaningful are relevant to one's basic or intrinsic needs for self-production and self-maintenance, and which are both biological and cultural. One is dependent upon the world and navigates this world effectively (i.e., the definition of cognition), whether this be the biological world of energy and matter flows, or the cultural traditions of languaging with which one maintains a precarious[54] identity as human.

6.6.2. Enactive cognition and significance:

Navigating the human domain of languaging involves "the enactment of a domain of distinctions out of a background" that the perceiver interprets "in the sense that it selects or brings forth a domain of significance out of the background of its random milieu" (Varela, Thompson and Rosch, 1991: 156). The significance referred to in this quote is that which enables the actor to maintain a relation with the world – that is, to conserve its autonomy – and this is to privilege the context-dependent skilful know-how of actors as the essence of cognitive activity and problem-solving (Varela, Thompson and Rosch, 1991). One of the key ideas here is the emphasis on 'activity'. As already discussed, enactivism does not subscribe to the view that organisms are passive receivers of information arising from their environments.

To coin Deleuze and Guattari (1977), cognition is a factory, not a theatre: cognition produces, it does not traffic passively in representations of a world already there. Instead, organisms actively participate in the generation of

54 The status of human identity has long been a philosophical preoccupation, via existentialism (e.g., Sartre, 1954) and post-modernism's death of the author (e.g., Derrida, 1978; Bakhtin, 1981).

significance – hence the term en*action* – a relational and, in humans at least, affective process organised around the realisation and maintenance of themselves as living, viable entities (De Jaegher and Di Paolo, 2007). As Colombetti summarises, from the enactive perspective, “an adaptive autonomous system is one that monitors and regulates itself with respect to its conditions of viability in its environment and improves its situation when needed”, and is indeed this characteristic of autonomy which gives rise to sense making, not as something additional to the processes of living but occurs “implicitly as a function of the organization of the system” (Colombetti, 2014: 16, 17).

Significance is “intimately related to the agent's autonomy at various levels, such as that of living processes of material self-construction” through processes that involve “coordinating the needs of the agent (biological, affective/ cognitive, social) with environmental factors (either facilitating or hindering)” (McGann, De Jaegher and Di Paolo, 2013: 204). Significance emerges from the interactions of the organism and the medium with which it realises itself. Consequently, claims that an environment holds inherent meaning, or that a person seeks meaning as if these existed independently of each other do not hold as valid descriptions according to the enactive perspective.

Cognition is contextual, and the individual and the social are co-enacted. Any “meaning inherent in a behavior or a situation involves the complex of relations between a cognitive agent and their environment” (McGann, De Jaegher and Di Paolo, 2013: 207), which includes the social or cultural traditions within which one maintains one's autonomy. What is meaningful to the agent is selected out of the environment, where meaning is determined by the agent's biological structure as a series of compensatory processes that return the state condition to a homoeostasis. In a metaphorical sense, meaning may be imagined to arise from the interactional 'space', belonging to neither

participant, but emerging like a 'dissipative structure' (Prigogine and Stengers, 1985) in the structural coupling of unity with medium.

As Di Paolo writes: “To make sense is for a body to encounter value and significance in the world, and these relate to the body's precarious, multi-layered identity. Sense-making is not something that happens *in* the body, or *in* the brain, but it always implies a relational and value-laden coherence between body and world” (2014: xii. Original emphases). Meaning is 'located' in the relational domain that is established (enacted) between the world and the structure of the agent. More formally, significance is the interaction of a cognitive agent with a world enacted according to the agent’s own structural determination.

Phenomenology and enactive cognitive science share in common the idea that the world discloses itself through how the organism perceives it, via the constitution of the perceptual apparatus. This is why the enactive approach is an embodied dynamic systems approach to cognition. This is not to suggest that the mind 'makes things up', in a sense of being fabricated, but rather that the 'mind' brings the phenomena of the world into awareness. As Thompson (2007: 15) describes it:

> “Things show up, as it were, having the features they do, because of how they are disclosed and brought to awareness by the intentional activities of our minds”.

This raises significant questions for the project evaluator. Whose project is being evaluated? Is it the practitioners’ or the evaluator’s project? Or is it the designers’ who set the parameters against which the project’s value is to be determined? Further, how is change identified, quantified, and against what parameters is it to be calibrated? The Enactive Theory of cognition raises challenges to how evaluations are to be undertaken, because the perspective foregrounds the constitutive power of the observer on whatever it is that might be observed.

6.6.3. Enaction and complexity science:

The enactive account, as outlined in the preceding pages, seems well suited for research under this emergent post-Newtonian paradigm. The theory of cognition that enaction describes is rooted in dynamic adaptive systems theory, and gives a clear explanation for change and evolution, while specifying how meanings emerge from the on-going interactions between human and environment that unfold in a non-linear way. It is not that the autonomous system is a unity among interacting processes; instead an adaptive autonomous system is already a "*perspective* on the world that generates meaning and norms for itself" (Colombetti, 2014: 17).

With its epistemological roots in autopoietic theory, enactive cognitive science also provides a robust explication of how systems are distinguished by observers, and how the observer is always a part of what is observed and distinguished. Maturana and Varela's writings take considerable steps to ensure that they maintain a clear accounting of the claims congruent with each of the explanatory paths from which descriptions and explanations are generated. However, it is this clarity of accounting which tends to give Maturana's writings the dense circularity for which he has been criticised (Mingers, 1995).

Moreover, an account of cognition predicated on a comprehensive biological research base also seems to be consistent with what has been classified under the broader rubric of complexity and post-normal science, where the latter is characterised by multi-level emergent properties (Kauffman, 1990; Holling, 2001), non-linearity (Lewin, 1992; Ostrom, 2007), dynamic and adaptive co-evolutionary change trajectories (Carpenter *et al.*, 2001; Norberg, 2004), and uncertainty (Pahl-Wostl, Sendzimir and Jeffrey, 2009; Polasky *et al.*, 2011). Enactive Cognitive Theory remains true to Maturana and Varela's original intent to develop a 'mechanistic' approach that allows for "no forces or principles [to] be adduced which are not found in the physical universe" (Maturana and Varela, 1980: 75). Congruent with the findings of complexity

science, according to enactive cognitive science, the global properties of the cognitive system emerge from the actions of the parts (Axelrod and Cohen, 2000).

6.6.4. Enaction and *phronesis*:

Because Enactive Theory is capable of accounting for the challenges raised by complexity science, as discussed in the previous pages, this theory is pertinent to the present study because it facilitates the research to account for the emergence of a recursive – that is, second order – learning system that learns how to learn about doing sustainability-related work, through the enaction of a learning environment.

In so doing, and with the benefit of an enactive perspective, this may contribute to bringing forth Flyvbjerg's (2001) emphasis that social science need not try to emulate the natural science's emphasis on Aristotelian *techne* (technology) or *episteme* (epistemology). Instead it should reorient itself by building on *phronesis*, which concerns the combination of practical ethics and practical know-how. Enactive cognitive science, with its roots in the biology of cognition, seems to offer a means through which such a call might be answered, because enaction entails skilful know-how (cognition as effective action relative to a domain of specification) and a deep ethical awareness – courtesy of privileging objectivity-in-parentheses – that one's own perspective is but one of many other equally valid worlds.

It is worth making explicit this implicit ethical orientation that permeates the enactive approach. This ethic can be baldly stated as a proposition. If one accepts that objectivist claims of certainty are no longer correlated with a proof of truth; and if one accepts that the world we each see and participate in is not *the* world, but is rather *a* world, and is unique to the structural properties of the observer; then, it follows, that if one wishes for a better world, one must learn to

live differently. In modern parlance, and attributed to Gandhi, one needs to become the change they wish to see.

Moreover, if one also accepts that this is the world one brings forth with others, one is reminded that the certainty of others is just as certain as one's own, and that if one wishes to remain in co-existence with the other, one must accept that the other's certainty is just as legitimate as one's own and just as valid. One makes space to allow the other their certainty as the expression of how the other conserves their own structural coupling in a domain of existence in which we co-participate.

The consequence of this however is that every act in language, every human act has an ethical meaning, "because it is an act of constitution of the human world" (Maturana and Varela, 1992: 247), and

> "to have ethical concerns, to be responsible, to be free, one must see the other and oneself in his or her legitimacy. That is, one must operate as a languaging being in the biology of seeing the other as a legitimate other" (Maturana and Verden-Zöller, 2008: 80-81).

One is therefore responsible for the world one brings forth with others. Our actions validate this world, in every moment in which we bring forth a world with others (Varela, 1999).

This does not reduce to a humanistic ethic either, but rather extends to a potential basis for sustainability as an ethical path. As Maturana writes, in his commentary on a piece by Bunnell and Sonntag (Bunnell and Sonntag, 2000: 72), "conservation follows a path defined by a preference for living in some particular manner that results in the systemic reproductive conservation of that same way of living, regardless of how such a preferences arises". In the conclusion of their co-authored text, Maturana and Varela (1992: 248) propose that "knowing is doing, and […] that every human act takes place in languaging

and, as such (as a social act), has ethical implications because it entails humanness".

They continue "*we have only the world that we bring forth with others, and only love helps us bring it forth*" (original emphases), where love "is an emotion that defines in the organism a dynamic structural pattern, a stepping stone to interactions that may lead to the operational coherences of social life" (p. 247). To abbreviate this, knowing is doing and is always and immediately an ethical undertaking. This seems to substantiate Flyvbjerg's (2001) conception of phronesis, and therefore enaction offers a viable paradigm with which to grapple with complexity through ethical practical knowledge.

In the following section, this brief and necessarily incomplete introduction to the key terms and conceptual architecture of autopoietic and enactive theory will review a few key implications for CBS initiatives. In particular, one of the main challenges associated with the enactive approach, and one that the family therapy community grappled with in the 1980s is, if we accept the fundamental premises of structure determinism, how does one influence another, or less instrumentally, how does change occur?

6.7. Enactive cognitive science: Implications for CBS initiatives

Front-line community-based sustainability (CBS) initiative practitioners are confronted with an array of state condition data concerning the systems in which they are interested. Like practitioners in many fields of expertise, CBS practitioners are called upon to differentiate between signal and noise, with the caveat that, working within the context of dynamic systems, what is noise today may become signal tomorrow.

CBS practitioners endeavour to make sense of the dynamic state conditions in which they are immersed. Doing so is to be engaged in a "motivated, continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively" (Klein, Moon and Hoffman, 2006: 71). That is to say, CBS practitioners are engaged in learning how to act effectively within their specific domain of operation, according to how problems and solutions are framed.

As discussed at various points in this thesis, the Sustainable Harborough Project (SHP) was ostensibly established as a "learning project", with a formal mandate to "test-and-learn" about what does and does not work to elicit changes towards sustainable outcomes. There is an expectation that over the course of their funded practice, the SHP practitioner team and Partnership Board members will have acquired information and knowledge pursuant to these learning objectives. However, as detailed in Chapter 2, CBS and international developmental aid projects seem generally to be poor at evidencing the effectiveness of what they do.

Research suggests that this is attributable to poor use of monitoring and evaluation (M&E) frameworks due to poorly defined or invalid monitoring indicators, or to a capacity deficit among the practitioners themselves. Other researchers have suggested that these poor results are due to a misalignment between the way that the project is designed and the complexity of the situations into which it is deployed as an intervention. This debate reduces to a tension between two arguments: the question of measurements and the question of alignment between the diagnostic and prognostic framing of sustainability.

In light of this tension, this research has sought to sidestep becoming an advocate for one or other position, and has adopted a meta-positioning relative to the case study CBS, predicated on it being cast as a learning project. The

line of thinking followed in this research is this: As a learning project, how might the project become a system of learning about what works to elicit change in the direction of sustainability outcomes? Put another way, how might the SHP design itself in order to learn?

By posing the question this way, at least three assumptions are being made. The first is no-one just knows how to do something; there is always a period during which someone acquires the skill (the know-how, or in terms of *phronesis*, the practical knowledge) to do what they do. Even though the SHP practitioner team and many from the Partnership Board are very knowledgeable, even adept and skilled, in their domains, few if any will have had practical experience of doing a funded CBS initiative in Market Harborough. Context presents both opportunities and constraints, and as was discussed in the present chapter, what works in one area will not automatically work elsewhere. This is, in part, what those researchers are suggesting when they point to a misalignment between intervention design and problem context. Consequently, even experienced practitioners undergo a learning[55] phase, even if that is to fit what they already know to a context they are discovering.

The second assumption this research makes is that, as a learning project, it is a legitimate question to ask what the SHP is learning. More precisely – is the SHP learning what it thinks or claims it is learning, which is the distinction between 'theory-in-use' and 'espoused theory' (Argyris and Schön, 1978) – and how does the SHP come to know that it is learning, in other words what changes and how are such changes registered? Furthermore, is the nature of the SHP's learning single loop (revisiting decisions) or double loop (revisiting assumptions or beliefs, which is far more rare)? More critically for a learning project though, is it engaging in learning how to learn?

55 Even if this covers more experiential ground than that of a novice.

This leads onto the third assumption. If a CBS initiative is deployed into a complex operational context, and this seems a legitimate claim to make given the multiple perspectives involved and the contested nature of sustainability, the vested interests, and non-linear effects, then for a project to be adequate, or fit-for-purpose, according to Ashby's *Law of Requisite Variety* (Ashby, 1957, 1958), tersely stated as "only variety in R can force down the variety due to D; variety can destroy variety" (Ashby, 1957: 202), then the project must be sufficiently adaptive to accommodate the complexity of the domain within which it operates.

No bounded system (such as a project or a technological innovation) is as complex as its context. How then can a project acquire the capacity to accommodate such complexity – such requisite variety – as its context? As plasticity is required for adaptation and accommodation, this is facilitated though learning how to learn in a reflexive, or second-order, manner. Learning how to learn is a milestone within the practice of developmental evaluation, and expresses the capacity for CBS project practitioners to respond adaptively to systemic perturbation. This is the nub of the research aim.

Put differently, reflexivity is a means through which a system enhances its requisite variety. Consequently, the development of the SHP in becoming a second-order (i.e., reflexive) learning system raises a question pertaining to whether the project is able to acquire sufficient complexity to operate effectively within the context of Market Harborough, where the town has already been identified as a complex adaptive social-ecological system (SES. See chapter 4).

In order to raise and contribute a response to such questions, the conception of learning and the scope by which to understand learning, has been extended beyond the computational theory of mind (CTM) and connectionism, where both of these approaches still depict cognition as information processing with symbolic representations of an external reality. Hence, the third wave of

cognitive science, enaction, was introduced in this chapter to help move this discussion along. But it is not without its own set of challenges. These are introduced in the following paragraphs.

6.7.1. Instructional and orthogonal interactions:

A critical implication of structure determinism for CBS initiatives is that the strategies of instructive engagement – that is, using information provision, teaching, and similar types of campaigns – are not likely to work in terms of changing behaviours. Unless those with whom the CBS initiative engages include the desired target behaviour within their range of state conditions, as per the principle of structure determinism, then the initiative will not trigger change in the desired direction.

The challenge of eliciting change was a cause for concern when the family therapy field began to entertain Maturana and Varela's ideas in the 1980s, and is also an obvious concern for pedagogy: how does one teach given the structure determined account of a system's capacity for change is autonomous rather than the heteronomy which standard methods of therapy and pedagogy are predicated on?

An approach appropriate to working with autonomous systems is to engage in 'orthogonal interactions'. Taking into account the discussion concerning structural coupling above, it is helpful to think of people as belonging to a range of different 'clubs' with which they are coupled. In 1950s sociology, the ethnomethodology of Goffman used the dramaturgical terminology of 'front stage' and 'backstage' behaviours to explicate how people present different parts of them self to different 'audiences'. Those with whom one feels closer will see more private, behind the scenes (backstage) behaviour, while those with whom one has only a passing affiliation will be presented with the front of house behavioural persona. Consequently, depending on which club one is a member of, one may allow other members of that club access to what is considered to

be 'backstage' and therefore a more intimate and vulnerable persona involving more trust than the usual presentation of self in everyday life (Goffman, 1959).

When recuperated into an enactive accounting of belonging to different clubs, it is clear that such clubs are human linguistic systems (Anderson and Goolishian, 1988). To elaborate: “social organization is the product of social communication, rather than communication being a product of organization. […]. Our view is that communication and discourse define social organization and that reality is a product of changing dialogue” (Anderson & Goolishian, 1988: 378). This perspective is commensurate with the arguments made earlier that put forward that we are human beings only in languaging. Stated more formally, this means that

> “to be human consists in being part of a network of conversations (manners of going together in language) which consists in different ongoing or recurrent configurations of recursive consensual co-ordinations of consensual behaviours that constitute in us as human beings all that there is in our domain of existence as such” (Mendez, Coddou and Maturana, 1988: 155).

That is, the clubs to which we belong are networks of conversations through which our distinctions that compose reality are shared and coordinated.

Change, be this via therapeutic, pedagogical, or a CBS initiative-driven intervention is not elicited via direct instruction because of the fundamentally conservative tendency of systems to seek structural homoeostasis. Change may be elicited through a process of participating in an established network of conversations while being a member of other conversational networks. Bridging club membership may begin to perturb the primary network in such a way that novel conversations emerge as part of the participants' compensatory homoeostasis. This straddling the margins of conversational networks involves joining but not committing to the network that one seeks to intervene with; one joins, but as an outsider. This is akin to the participant-observer role in

ethnographic research: one participates as an observer, but not as a fully-fledged member of the system being observed.

These orthogonal (that is, different) conversations or interactions occur outside of the domains of ordinary conversations, but not so far outside that it cannot be within the range of structural capacities of at least one member of the family, class, or the public. In short, an orthogonal approach means interacting with the system so that one does not re-constitute the system, but nevertheless introduces different conversational opportunities. This is the fine art of achieving a delicate balance between sameness and difference to bridge the generation of different conversational networks that invite different ways of living to emerge. This is certainly a skill, rather than a methodology.

This bridging (or orthogonal interactions) provides a rationale that explains why meaningful consultation is critical to cultivate receptivity for introducing any change (Jeffrey and Seaton, 2004; Westmark, Offenberg and Nissen, 2011), because it involves joining in with conversational networks. The concept of conversational networks (or linguistic communities or systems) also explains the complexity of community systems as a multiplicity of perspectives, speaking positions, and distinctions.

6.7.2. The importance of language:

A further implication of the enactive account is that it emphasises the critical – if not central – role of language in the construction and negotiation of human realities. We are always immersed in languaging the world into being. To reiterate, language and conversations do not transmit or convey information, but coordinate how the world is distinguished (that is, brought forth).

Consequently, how front-line CBS practitioners language the domains within which they enact themselves as CBS practitioners, the problems that they define as being problems and the solutions that they define as remedies

are all constituted within language as ways of punctuating, or drawing distinctions, indicating, a world cleaved into problem and solution spaces. The practitioners participate in a linguistic community around problem statements, a problem-determined system (Anderson and Goolishian, 1988), and this system will persist until such time as the linguistic community dissolves, either through attrition of members – people might spend more time participating in other languaging communities – or because the linguistic constitution of the problem system shifts. In either case, problem construction, solution development, monitoring and impacts evaluations are each shaped by the way these are languaged (Berger and Luckmann, 1971; Shotter, 1993).

Because we are realised through the network of the linguistic communities in which we participate, part of the challenge facing any attempt to introduce change, be this family therapy, international developmental aid, or community-based sustainability intervention is how to open spaces such that different conversations can be engaged in (Elkaïm, 1990; Dallos, 1997; Dallos and Urry, 1999; Shotter, 2009, 2012; Anderson, 2012). By opening space in such a way, what the intervention effectuates is the creation of environments that provide alternative classes of experience for the participants (Bopry, 2001).

As will be picked up on again in the next chapter, one of the periodically recurring motifs of the case study CBS project is the Project Manager's use of the phrase "tone of voice". This is unpacked to refer to a way of speaking with (potential) stakeholders that is non-judgemental and non-accusatory in terms of what people *should* be doing with respect to sustainability, but also envelopes an application of Dr Seuss' "Horton's Rules": say what you mean, and mean what you say. In this instance, this refers to committing to and following up on commitments, and not promising more than can be delivered. In other words, the generation of trust. Whether one terms this a 'tone of voice' or the opening of a space, the impact seems to be the same. Novel ways of engagement are

encouraged, and novel conversations are facilitated. These become opportunities for new experiences to be enacted by the participants.

From Varela's perspective, this demonstrates that, through facilitating such conversations, "a cognitive system can be shown to be functioning adequately if it becomes part of an existing world of meaning or if it *shapes a new world of meaning*" (Bopry, 2001: 56. Added emphases). In Bateson's (1972) terminology, this is information, because it is news of a difference that makes a difference. To the degree that the SHP is able to facilitate such conversations, it becomes a learning (or cognitive) system.

6.8. Chapter synopsis:

The crux of the enactivist claim of an embodied dynamical system approach to cognition is this: the structure of the organism's body constrains the shape of the world in which that organism participates. But, as discussed above in terms of structural coupling, the world also constrains the organism's capacity to realise itself. Conditions may just simply not be favourable. A bacteria may not find a sugar gradient, but only toxicity which does not support the conservation of its autonomy. Hence, enactive autonomous systems are also adaptive; the system continuously monitors and assesses its environmental context with respect to those conditions that are conducive to its continuation. Cognition – or mind – is therefore relational, not located within the skull, a proposal with deep resonance with Bateson's (1972, 1979) own notion of an ecology of mind. Adaptation is, from the perspective of an observer (objectivity-in-parentheses) and with the benefit of a second-order cybernetics (the study of observing systems), learning.

One of the ramifications of this is that information is context-dependent and relative to the organism. In other words, the information belongs to or is

generated through, the coupling of the organism and its medium, and will be determined by the history of that coupling (ontogeny). Such coupling originates through the structure and needs of the organism acting in its environmental milieu. This is a far cry from objectivist claims of information and knowledge that presupposes one might be able to state what is or is not true, pass judgements about validity, and to state what counts as information. This latter perspective is what Maturana refers to as claims to a transcendent objectivity, or objectivity-without-parentheses.

For the present research which concerns how front-line CBS (community-based sustainability) practitioners generate and utilise learning about what works to elicit changes towards sustainability, the refutation of objectivist truth claims carries significance: for example, who makes such claims that what the practitioners monitor and evaluate constitutes information, and from whose perspective is such information valid (Checkland and Scholes, 1990; Hardman and Paucar-Caceres, 2011)? It also raises questions about what evidence supports claims of efficacy, what metrics of validation are used to calibrate change, and how attributions can be made to the interventions of a CBS initiative (Guba and Lincoln, 1989; Lincoln and Guba, 2002)? These are deeply challenging questions, and dovetail with the earlier discussion about the contested political nature of sustainability as a concept, and as it is translated into a suite of metrics.

As the myriad attempts at arriving at universally appropriate sets of sustainability indicators has already demonstrated (see section 2.2.2., above), what matters for some communities of observers is less significant for others. It is not the indices themselves that have changed; rather, what changes from community to community[56] is the 'web of significance' each community casts upon the world they realise. The contested nature of sustainability indicators then is not about the indicators at all: rather, it concerns the range of

56 Recognising that there are multiple communities, including communities of practice.

significance communities enact in making sense of the world with which they realise their autonomy. It is also evident that the same concern envelopes what constitutes meaningful and valid evaluations of impact, what counts as evidence, and how much weight is to be attributed to it. The value of evidence with respect to impact evaluations of CBS project interventions, like the value of sustainability indicators, is a dynamic product of the multiverse of meanings generated in and through the languaging with which humans participate in the cultural traditions in the realisation of themselves as human beings.

Within these complex operational contexts, community-based sustainability initiatives navigate and attempt to maintain their own organisational autonomy. To the degree that a project continues along its pre-determined trajectory, delivering against pre-defined outcomes and objectives according to a pre-set suite of indicators, the added value of such an endeavour has raised doubts.

The debates continue about whether the poor performance of CBS and international developmental aid initiatives are due to the monitoring and evaluation parameters used and the concerns about practitioner capacities to engage with these with the necessary rigour, or whether the source of the poor performance is the result of how project designs are misaligned with the complex nature of the situations to which they are deployed. Put crudely, the debate seems polarised into a concern about the viability of M&E frameworks and practitioner capacities on one side or the failure to adequately align diagnostic and prognostic framing on the other.

In an effort to sidestep this polarity, the present research has considered whether the case study CBS initiative, the Sustainable Harborough Project, is fit for the purposes for which it was enacted: to learn about what does and does not work to elicit sustainability at community scale. Consequently, it is of lesser concern how it goes about reaching targets, than how it evolves to take on

board and account for the complexity of the context within which it is realised as a learning project. Current approaches to evaluation are oriented to consider the performance of a project relative to its outcomes; developmental evaluation however concerns itself with the processes of learning and innovation of the project as it operates under conditions of complexity. The claim is made in this thesis that developmental evaluation methods are constrained by extant theories of cognition and mind that emphasise an objective reality knowable via the manipulation of symbolic representations.

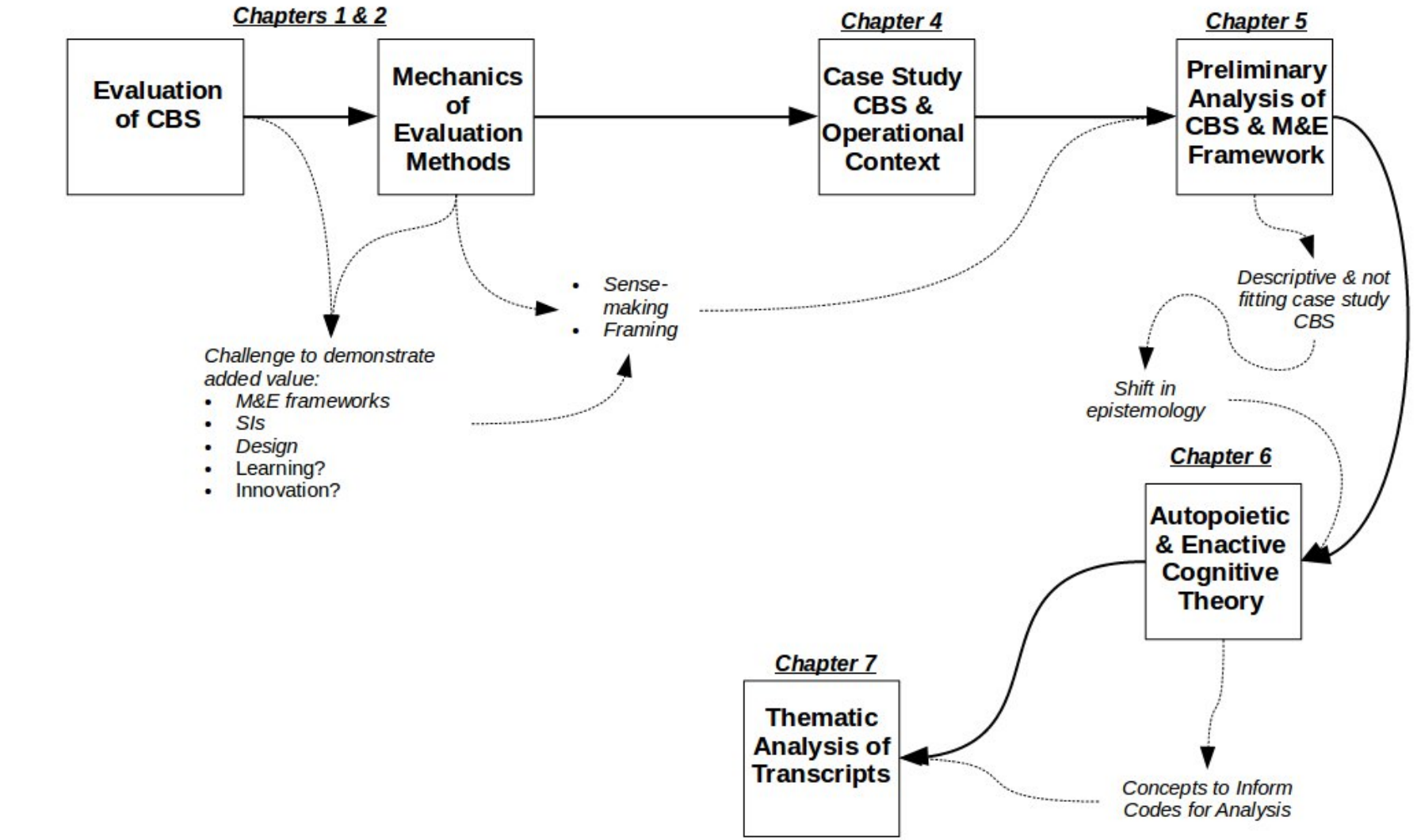
The point was made in Chapter 5, and elaborated on here, that such theories are inadequate in accounting for the proliferating complexity of adaptive systems. Therefore, an alternate cognitive paradigm has been described that provides the conceptual toolkit with which to think complexity without reducing it to degrees of correspondence to a fixed and ultimately knowable objective reality. This third wave of cognitive science, enaction, has its roots in the Santiago school of the biology of cognition. This was identified as a research objective (objective 4), and having now introduced and discussed the theoretical basis of enactive cognitive science, in the following chapter the application of these concepts will be to develop a second coding dictionary which is informed by the perspective obtained from second-order cybernetics (see Appendix I).

It has been assumed that as this perspective has rarely been applied to the complexity of sustainability[57], the approach warranted an introduction and elaboration. Having achieved this brief and incomplete overview of the theory, the data and findings described in Chapter 5 will be interpreted and filtered through the enactive lens in Chapter 7 through a thematic analysis to trace out a developmental evaluation framework that can track how a project, such as the

57 There are, however, some who *do* take account of these ideas (Bunnell and Sonntag, 2000; Russell and Ison, 2005; Ison, 2010; Hukkinen, 2012, 2014; Ison, Blackmore and Iaquinto, 2013; Levänen and Hukkinen, 2013; Ison and Blackmore, 2014).

SHP, becomes a second-order (that is, reflexive) learning system and thereby generates requisite variety.

From the perspective obtained from the body of literature introduced in this chapter, the focus of research can now be more drawn in to exploring what determines the project's way of observing and doing sustainability in the way that it does. Put differently, a second-order learning system entails learning about the processes and conditions that structure the learning, and consequently, how the project draws its distinctions which determine it as an observing system, and which, in turn, conditions how it *does* sustainability.


Chapters 1 & 2
Evaluation of CBS
Mechanics of Evaluation Methods
Chapter 4
Case Study CBS & Operational Context
Chapter 5
Preliminary Analysis of CBS & M&E Framework
Challenge to demonstrate added value:
M&E frameworks
SIs
Design
Learning?
Innovation?
Sense-making
Framing
Descriptive & not fitting case study CBS
Shift in epistemology
Chapter 6
Autopoietic & Enactive Cognitive Theory
Chapter 7
Thematic Analysis of Transcripts
Concepts to Inform Codes for Analysis
Key:
Main Chapter Themes
Reflective Sub-Text

7. DEVELOPMENTAL EVALUATION OF SHP AS A LEARNING SYSTEM

7.1. Introduction:

Marjatta Maula offers a useful distinction between a 'learning organisation' and 'organisational learning', which has a bearing on the present research. She posits that a "'[l]earning organization' emphasizes structural and other aspects that make learning processes possible. 'Organizational learning' deals with the learning process and its stages and characteristics" (Maula, 2006: 13).

To date, little research has been undertaken on how international developmental aid and community-based sustainability (CBS) initiatives operate as learning organisations. There has been more research on the organisational learning of CBS initiatives however, since this is the usual focus of studies on monitoring and evaluation (M&E) indicators and impact evaluations. A case could be made that Maula's distinction is an apt description for the debate that underpins the present research. On one hand there is the claim that CBS suffer from poor M&E practices, either due to the indicators themselves or the capacity of the practitioners to engage in M&E.

On the other side of the debate is the case made by Burns and Worsley (2015) that CBS initiatives are linear solutions deployed in complex contexts. This reflects Maula's description of a 'learning organisation', which emphasises those characteristics of an organisation that facilitate the organisation's capacity for learning. It is this which the present research builds on, and in the conclusion of the last chapter, having introduced the enactive theory of cognition as appropriate to deal with the properties of post-normal and complex systems, the case was made that Ashby's (1957) Law of Requisite Variety

applies: for a CBS initiative to be able to contend meaningfully with the complex adaptive systems to which it is deployed, the initiative must itself be sufficiently complex to adapt accordingly. This capacity of adaptation to complexity – that is, in cybernetic terms, variety – is the initiative's potential for reflexivity. It is, to return to Maula's distinction, the initiative's capacity to be a second-order learning organisation.

Having engaged with the Sustainable Harborough Project (SHP) as a participant-observer in an extended case study of a community-based sustainability (CBS) initiative, my research has sought to explore how such a project endeavours to make sense of itself in its operational context. For a project to do so, to become a learning organisation, is, according to the literature, a non-trivial accomplishment. As Carman comments in her review of community-based non-profit organisations and their use of monitoring and evaluation (M&E) data, the emphasis on learning is so fundamental that

> "Funders need to stop asking community-based organizations to provide them with reports designed for accountability purposes that simply monitor or report evaluation and performance data, and they need to start asking (and then rewarding) community-based organizations for reports designed to *demonstrate how they are using evaluation and performance data to improve service delivery*" (Carman, 2007: 72. Added emphases).

It is no longer enough to simply report inputs and outputs and to call this monitoring and evaluation. What is required is for CBS initiatives to close the loop so that what is monitored and evaluated is then reinvested as intellectual capital into a recursive loop of on-going improvement and learning. That is, projects need to be able to acquire the capacity to learn from their experience, to develop the capability for learning how to learn, thereby becoming a learning organisation. This capacity is second-order (or, In Bateson's terminology, 'deutero') learning.

From an evaluation perspective, this is neither an impact nor a process evaluation, but is instead a *developmental* evaluation, which is thought to be suitably responsive to be utilised effectively in the operational complexities which describe most of the domains within which CBS initiatives operate (Patton, 2011; Dunkley and Franklin, 2017). Briefly, developmental evaluation is an emergent approach that engages with project actors to help

> "identify the dynamics and contextual factors that make the situation complex, then captures decisions made in the face of complexity, tracks their implications, feeds back data about what's emerging, and pushes for analysis and reflection to inform next steps, and then the cycle repeats" (Patton, 2011: 30).

As an approach, it appears well suited to project initiatives that are intended to tackle wicked problems (e.g., sustainability) and which, as a result, operate under conditions of complexity and uncertainty, wherein predictability and control are low. The relevance of drawing on a developmental evaluative perspective is substantiated by the expectation that the case study CBS, the Sustainable Harborough Project (SHP), is predicated on being a 'test-and-learn' endeavour, itself a learning project, in order to determine what does and does not work with respect to eliciting changes congruent with sustainability outcomes. Moreover, the approach is consistent with the Action Research work already included in the project design.

While it is acknowledged that the SHP could quite simply describe itself as a 'learning project' insofar as it might engage in error correction (single-loop learning), the argument developed in this thesis is that in itself this does *not* constitute SHP as a learning system. At the least, a learning system needs to engage in double loop learning, for example, by critically revisiting the variables by which the project is itself governed, such as its goals, strategies and plans (Argyris and Schön, 1978).

However, what constitutes the SHP as a learning system is that it opens space in such a way that makes learning possible for its own team and stakeholders, and in the process of doing so, generates the capacity to learn *how* to learn. It is this latter capacity that enables the SHP as a system equipped to adapt to changes within its operational context, thereby maintaining its relevance and validity as an autonomous unity. As a result, this reflexivity elevates the SHP to being able to be fit for purpose given the complexity of its operational domain.

To reiterate, the objective is *not* an evaluation of the project's outcomes vis-à-vis the monitoring and evaluation framework criteria. Validity and relevance pertain to fit between intervention and problem framing, not the delivery against pre-determined indicator and outcome measures. The relevance of a system, on one hand, concerns the effective actions with which a given system maintains its coherence. A system survives because it occupies a niche space, and describes the degree of adaptation and accommodation of the system to its domain of existence (here, Market Harborough). But a system survives because the domain is realised by the project actors as observers in the ontogeny of recurrent interactions.

The last successful adaptation that maintains a system's autonomy is the platform for the next in a recursive network of structural couplings, that condition a medium, a linguistic domain, with which the SHP system coheres as observing (i.e., distinguishing) actors. These are the necessary conditions within which language arises, in this case about eliciting and enabling a more sustainable way of living in Market Harborough. Language communities gravitate around multiple framings of problems and solutions, and problems and solutions are maintained by the recursive coordination of consensual distinctions in the linguistic domain. This brief and high-level recall of second-order cybernetics and autopoietic theory of languaging, detailed in the previous chapter is to set the stage for a key development in this research journey.

As with Chapter 6, the present chapter seeks to further the fourth objective of the research: to explore the applicability of enactive cognitive science as a heuristic in the facilitation of project actor learning through developmental evaluation (Section 1.3., above). This chapter presents the development of a second generation thematic analytic code dictionary (see Appendix I) drawing on concepts reviewed in the last chapter concerning a perspective on learning that does not assume a break between the observer and the observed.

Instead, the perspective makes the case for the simultaneous co-arisings, bringing forth, of the observer and the observed. This perspective affords a shift away from the degree of correspondence between an observer and the observed (positivism/ objectivity-without-parentheses) while distancing itself from solipsism. Instead, it traces a path between these two extremes, described previously with reference to enactive cognitive science.

This chapter is structured as follows. The next section introduces some general considerations about learning systems (or organisations), following which the generative process through which the codes used in the Thematic Analysis is reviewed. This was an iterative process with the current code dictionary being the second generation in the development of a code set that is considered fit for purpose given the nature of the data set and the research aim that motivates this study.

After this, the Thematic Analysis is undertaken in two phases. The first is the actual coding of the data set, which is detailed at some length. The second phase draws together the emergent themes, and these are discussed in Chapter 8 with respect to the research aim and questions. The chapter closes with a brief synopsis.

7.2. Learning systems: Some preliminary comments:

While there may be little consensus as to how a learning organisation (or system) is to be defined, a number of theorists have attempted to pin down its characteristics (e.g., Senge, 1990; Boisot, 1999; Yeo, 2005; Garvin, Edmondson and Gino, 2008; Vorhauser-Smith, 2011). However, in broad terms, such a system may be recognised as one that, at a minimum, "facilitates the learning of all its members and continually transforms itself" (Koskinen, 2010: 92).

From the preceding chapter which recruited the third wave cognitive theory of enaction, learning is not the production of knowledge, because knowledge is not a thing to be produced. Rather, learning is adaptation, or to use the terminology from autopoiesis, it is the ontogeny of historical recursive adjustments that a system and its medium undergo in the conservation of the autonomy of each system. This process is termed structural coupling, and the example of the relationship between a foot and a new shoe was given to illustrate this recursive process of mutual influence on the developmental trajectory of both foot (blisters) and shoe (breaking it in) over time. Rather than learning resulting in a product called 'knowledge', learning generates knowing, which is, from the enactive perspective, effective action within the context of the domain with which a system realises itself. Hence learning leads to more effective action, a more adaptive way of doing something. In language, learning is the generation of new meanings.

Koskinen's (2010) quote above reflects a small but growing interest in applying the ideas of autopoietic theory to organisational development and learning. These theorists seem to converge around the possibility that autopoiesis "offers the basis for a new general system theory", a "unifying framework for explaining a spectrum of organizational phenomena, from stable

to highly dynamic organizations and environments" (Magalhães and Sanchez, 2009: 4).

As Maturana and Varela assert, humans are realised through languaging, and consequently, human organisations and social systems are also realised in languaging. Organisations are, as Stacey puts it, communicating in the living present (Stacey, 2001), meaning they are social processes realised through language. Put simply, organisations are linguistic networks. This emphasis on the temporal dimension of the present helps explain Koskinen's (2010) suggestion that learning organisations are engaged in continual transformation.

Although autopoiesis is a form of organisation pertinent only to biological entities, the metaphor of autopoiesis applies to social systems, *sensu* Luhmann (Luhmann, 2013), such that a learning organisation self-organises and self-produces (*auto* and *poiesis*), while maintaining its identity (autonomy) as an entity distinct from its medium of operation within which it enacts itself.

7.3 Generating codes for the Thematic Analysis:

While the capacity to measure well defined performance indicators and delivery outcomes is mature in traditional evaluation methods, it nevertheless appears that such methods struggle to account for *in situ* project actor learning. Unless pre-defined as an outcome, evaluations tend not to attribute significance to innovations introduced over the period of project deployment, even when doing so is pursuant to efforts to satisfy project objectives (e.g., Cinderby *et al.*, 2014). Adaptations may not be selected for in outcome or impact evaluations, nor during process evaluations, if the adaptation was not scripted into the project's theory of change or programme logic, even though the adaptations may have influenced subsequent judgements and decisions. As a result, such

methods may overlook innovations that evidence learning, expressed as an adaptation or amendment relative to one or other observed constraints or opportunities in the context to which the project is deployed.

Developmental evaluation (DE) is an approach that treats project actor learning, development and testing of innovations as evidence of organisational learning (Patton, 2011). In practice, it is located alongside more traditional evaluations, and may be applied in a formative or a summative capacity (Scriven, 2010). While it is clear that DE *does* emphasise the importance and value of a project's learning, acknowledging innovation and how the project draws on such learning as an asset; and while the key DE methods text is sub-titled "*Applying complexity concepts to enhance innovation and use*" (Patton, 2011), what the framework *does not* do is to provide a coherent account of learning – as a cognitive process – under conditions of complexity. This is where the cognitive theory (discussed at some length in Chapter 6) plays a critical role through bringing together a framework for understanding, a heuristic, with concepts drawn from second-order cybernetics and self-producing autonomous systems to populate a DE approach to track how project actors learn to learn.

The first generation thematic analytic code dictionary (see Section 5.3., above) drew on concepts from the sense-making and framing literature, as discussed in Chapter 2. This literature was recruited in an attempt to provide two complementary theoretical accounts for how actors make sense of the world, define problems and design solutions. Neither of these two sets of literature articulate an explicit cognitive theory, although both implicate cybernetics as a basic model of cognition (self-regulating and self-organising systems).

To briefly recap the journey with respect to the analysis so far. Goffman (1974) introduced sociology to Bateson's (1972) concept of framing as a meta-

communication, a way of understanding an event, including communication itself, involving feedbacks and information cycles. From this, social movement researchers Benford and Snow (2000) offer diagnostic and prognostic framing as ways to describe, in dynamic systems terms, complex basins of attraction around which interpretations about the nature of problems and their remedial action converge.

The broad notion of framing, a proto-type account for drawing distinctions (Spencer-Brown, 1973) as introduced and elaborated on in Chapter 6, allows a closer look at meaning making. Two principle theorists, Weick and Dervin, were introduced to expand on this generative process of meaning making. To start, Weick's (1988, 1995) work references the construction of sense (that is, meaning) as an 'enactment', a bringing forth of sense. Prior sense made becomes a residuum, shaping, constraining, and influencing one's subsequent capacity for novel sense making. These dynamics are familiar in cybernetic terms as feedbacks and systems of communication, information transmission and reception, and processes through which the system self-regulates. The residuum is a controller that governs the amplification of sense making opportunities.

Dervin (1998), on the other hand, cites a 'gappyness' in knowledge, a critical point at which knowledge and sense break down, as the creative spark that ignites sense making activities. She advocates that there are times when sense must be deliberately *un*made, to undo and rethink what may have made sense before in order to advance one's attempts at problem solving. To some extent, this process of unmaking sense may be seen as a deconstruction of Weick's concept of residuum.

In combination, these two perspectives offer a rich conceptual framework to explore processes of learning, and hence were recruited as heuristics with which to generate a code dictionary (see Appendix H). This dictionary was then

applied to the transcripts to further the exploration of how the case study actors tried to make sense of their roles as facilitators of change towards sustainability outcomes given the constraints and opportunities of their operating context, Market Harborough. This was discussed in Chapter 5.

The first pass using this code dictionary to thematically analyse the transcribed data sets yielded relatively superficial themes about instrumental learning, and very little about the process of learning itself, outside of double-loop learning which had been initially coded for. As it was, this did not help address the research aim, i.e.: How a community-based project becomes a second-order learning system through continuous developmental adaptation to the constraints of its operational domain to maintain its relevance as an intervention.

Despite articulate theoretical accounts for sense-making, both Weick and Dervin's theories neglect to account for the observer as delimiting the scope and nature of the field of observation that is made sensible. Since this research concerns how the project actors themselves generate learning about how to be effective project actors given the operational context as they understand it, a way of accounting is required for this generative process. Following a first pass at the data set using the code dictionary (see Appendix H), this process is more adequately captured with reference to concepts drawn from enactive cognitive science than by sense-making and framing.

To generate the second version of the code dictionary the enactive cognitive theory discussed in the previous chapter was recruited. Because enactive (autopoietic) cognitive theory does not allow for any concepts that have not been previously accounted for, that is, it does not adduce external influences, the key conceptual milestones in the theory lend themselves to be codes in the second generation of the thematic analytic coding dictionary (see Appendix I). Taking empirical processes (structural coupling, teleology,

autonomy, organisation, structure, boundary conditions, etc.) as codes, these markers could be tracked across the transcriptions. Conceptualising learning as a process of adaptation congruent with how a self-organising system maintains its unity relative to the medium of its realisation, the codes developed in the second generation of dictionaries are more sensitive to recursion and reflexivity.

Having now introduced and discussed this additional body of literature, this study is equipped with a theoretical basis and conceptual tool-kit with which to reconsider the data sets introduced in Chapter 5. With this conceptual tool-kit to hand, this section proceeds with the thematic analysis of the data.

The transcribed audio file datasets were subject to Thematic Analysis (Braun and Clarke, 2006; Bryman, 2012), as described in Chapter 3. This method involves the iterative review and generation of codes that identify unique and research-relevant meanings implicit in the transcripts. Over time, and with successive reviews, these codes are fine-tuned, and as the codes begin to fit and describe the patterns found in the text, they are combined in the generation of themes. Themes are recurring patterns that tell the story of the meaning of the studied text.

The method is an iterative process that extracts relevant themes from the data set in order to consider how these are reflected throughout and shape the data set. The focus here is on tracking how the SHP establishes itself as a learning project capable of learning to establish what does or does not work in the elicitation of community sustainability (that is, a second-order learning system).

The codes are the end products of several iterations of reviewing the transcriptions. Earlier attempts at developing coding were too close to a description of the data sets themselves, tracking specific domains, such as areas of knowledge (e.g., administrative, technical, managerial, etc.) and type

(e.g., empirical, belief, etc.) and examples of project ethos (e.g., enabling, delivery, etc.). This preliminary code set was changed to track examples of impact assessments and types of learning (e.g., single or double loop, etc.), but this was still felt to be too descriptive.

Following several reviews of the data set and now equipped with concepts drawn from autopoietic and enactive cognitive theory, such as autonomy, structural coupling, reflexivity, and so on, the third – and final – code dictionary has been compiled (see Appendix I). These concepts are organising motifs that provide a way of thinking about the way that each of the team and Board members, along with other recorded stakeholders, participate in bringing forth descriptions and reflections about how they make sense of their operational contexts in the simultaneity of enacting a CBS project.

Concepts discussed in Chapter 6 furnished me with a way to think about the projects' accounts of difference and similarity, to explore how the project's identity is realised and maintained through its participants; and to describe the project-context nexus of relations in terms of structural coupling as an emergent linguistic community converging around third order agreements for sustainability outcomes.

This iteration has proven to be an appropriate balance between descriptive and implicit content in the transcriptions, and enables a way of coding the ideas and linking these together in ways that assemble themes that are germane to the research aim. More importantly, it is able to draw out key systemic processes (e.g., relationships between systems and media; systems as linguistic distinctions; emergence of second and third order observations; stochasticity and order; etc.) in a manner that does not require adduced principles (Maturana and Varela, 1980, 1992; Maturana, 1988b).

The codes are applied from a developmental evaluation (DE) perspective. In other words, the point has been to find ways of reflecting the processes of learning the project team and Partnership Board have undergone. This includes how the project was designed and deviations from that initial design, to experiences in the field. These code categories are applied to the transcribed data set as per the method of Thematic Analysis (Braun and Clarke, 2006) reviewed in Chapter 3 and discussed here.

The emergence of themes is discussed in 7.5., below. The code categories are presented in Table 7.1. The categories are conceptual bridges to the conceptual architecture of enactive and autopoietic theory. The code dictionary contains detailed descriptions for each code, and is at Appendix I. Finally, a screen grab of applying these codes in RQDA (Huang, 2014) is included in Appendix J.

Property:	**Parameter:**
Identity	Autonomy. The system generates its own identity as a distinct entity, such as through defining its ethos and approach, and taking into account how it is referenced by others. It specifies its boundary conditions, through defining what is inside and beyond its scope of operations.
Transformation	Renewal. A learning system continues to renew itself while maintaining its identity, taking into account the network of reciprocal interactions within which it is enmeshed.
Reflexivity	Deliberate interventions in causal loops. The system shows the capacity to intervene in order to introduce changes in the course of its developmental trajectory, suggesting teleological self-awareness.
Viability	Knowing as viable behaviour. A learning system must evidence its continued viability relative to its medium of operation. Viability is relevance, that what it learns contributes to the conservation of its identity.
Design	Implementation of learning. This will be evidence of engaging in both single and double loop learning, as well as engaging in deutero or meta learning such that the system learns how to learn. This will be manifest in taking and implementing strategic decisions on the basis of evidence.

Property:	Parameter:
Reciprocal interactions	Structural coupling. The learning system maintains contact with its operational milieu in a process of reciprocal influences. This will be manifest as the system exerting some degree of influence on its medium, and the medium exerting influence on the system. This may include project outcomes and impacts, but is not reducible to these.

Table 7.1. Code categories for the Thematic Analysis of the data set from a developmental evaluation perspective.

7.4. Thematic Analysis: Applying the codes:

Table 7.1., above, presents the code categories. As documented at Appendix I, each of these six categories is comprised of more finely tuned codes. In each of the following six sub-sections each code category will be described with respect to data collected during the study. Thereafter, each sub-section is devoted to extracting a few salient examples from the transcriptions that illustrate each code in use. The use of angle brackets '<' and '>' in the citations is to illustrate quotations of real or imaginary conversations as third party speech.

7.4.1. Identity (Autonomy):

In enactive and autopoietic theory, autonomy refers to the organisation of a system such that it is a distinct class of system (see section 6.5.1., above). All systems are autonomous, but only some (typically biological) are autopoietic. This category is the first of three core categories that concern learning systems, and seeks examples that illustrate the Sustainable Harborough Project (SHP) evidencing an awareness of itself as distinct – since self-awareness is a necessary pre-condition for a second-order learning system – from its partners and the context within which it is located.

7.4.1.1. Ethos and approach:

The SHP has elected to follow an enabling model of engagement, rather than a *de facto* delivery model. The distinction is not always clear, but may be construed as falling along a continuum, with one extreme involving a project delivering activities and projects to the community with variable degrees of consultation, engagement, or involvement of the local people. At the other extreme, the enabling model would see the project as working exclusively as a facilitator of helping the local communities accomplish what it is that they considered desirable, including facilitating the community in determining what it was that they wanted to accomplish. In practice, the SHP has occupied different points along this continuum, although does tend predominantly towards the enabling model. Each model has its own risks, and the SHP has encountered examples of these during the course of both its delivery and enabling modes of operation.

The SHP team elaborate on how they understand their role as facilitators of change through the emphasis they put on supporting and empowering – what they term 'enabling' – interested people to take advantage of opportunities, and to acquire skills themselves, rather than to encourage a passive relationship with stakeholders as recipients of services. This approach is congruent with the perspective the team have on the various starting points for people's journeys of change, expressing a latent theory of change that is about supporting participant-led change, rather than developing and delivering deliberate interventions that set out to elicit behaviour change or even to motivate people to change.

This emphasis is captured in a comment made by a project team member during the New Economics Foundation (NEF) facilitated Theory of Change workshop with the project on November 17th, 2014, with reference to beginning a community agriculture scheme:

> "[W]e're still trying to put the two ethos bits onto that, and say <well, we've got the land, we're interested in doing something>, and we'll put the resource into it, but the idea is that a community group will form and they will take ownership and leadership of that, and there'll be some kind of sustainable model that sits behind all that. If people don't come on board then there's no point in us doing it ourselves, so we'll probably park it unless there's more interest"

The project tends to identify its ethos as working through people, rather than doing something *to* them, as illustrated in a comment from the same workshop:

> "[T]he way we talk to people, the way we try and develop projects without sort of hitting people over the head with the sustainability stick, talking about what people are interested in and what matters to them – e.g., the ecohome" (SHP team member, NEF Theory of Change workshop, 2014-11-17).

How the project identifies what needs to be done, what supports are required is through some form of community consultation process, such as the Public Food and Drink Forum in October 2013 and the Public Energy and Water Forum in January 2014. These two events have been the impetus that have shaped the main directions of the subsequent project activities. Each of these events encouraged those who attended to both identify areas of interest and priority and also where their own willingness to participate lay. A project team member explains this during the Mid-Term Evaluation meeting between Rose Regeneration and the SHP team, on December 17th, 2015:

> "[W]e've taken account of what's already there, we haven't got everybody [sic] and asking <who wants to do this?> without first finding out what's already there, so bringing people in from different areas, but also not treading on existing toes – really, really important, especially in a market town community, because in a city you can have several projects running alongside each other in different areas, but in a town like this you just can't because the first thing people will say to you is <isn't there one of those already on …?>"

An enabling intention builds in local capacity that can (potentially) survive past the funding window, while a delivery intention seeks to establish a set of outputs, but is unlikely to survive beyond the funding window. Here, the distinction is very much akin to the adage that differentiates between teaching someone to fish (enabling) rather than fishing on their behalf (delivery).

The second dimension that highlights this distinction concerns project implementation. Implementation that privileges an enabling ethos identifies the people and seeks to help them clarify and determine what it is that they want to do, helps to carry the capacity for them until such time as they can take it over, and then gradually backs away through progressively handing over control to the stakeholders as they assume more ownership. A project team member clarifies this emphasis, during the Mid-Term Review meeting with Rose Regeneration:

> "Without being too interventionist. We've gone out and done stuff but in an enabling capacity rather than a strictly delivery capacity. We are delivering Harborough Energy, and this is the difference between edibLE16 and Harborough Energy, but we're doing it on behalf of the directors really" (SHP team member, Mid-Term Review Staff meeting, 2015-12-17).

In contrast to the enabling approach, a delivery ethos seeks out an opportunity to do something and having found an opportunity, proceeds and does it, so that stakeholders make use of whatever the project has done. However, in this latter case, stakeholders will not necessarily know how to do the delivered project for themselves, nor how to learn from it and replicate it, nor how to amend or correct it if it goes wrong or is inadequately aligned with their own needs.

In email correspondence with the SHP Project Manager on June 7th, 2016, the following understanding of the difference between an enabling and a delivery ethos was arrived at. It is important to contextualise this understanding

that – from the Project Manager's perspective – "the ethos set[s] the intention" while "the distinction [between enabling and delivery] is what the end intention is" (email correspondence, 2016-06-06). Taking this into account, the distinction can be mapped out on two dimensions. The first concerns the intention, while the second concerns implementation.

This is illustrated in the following quote from the semi-structured interview with the Project Manager (April 27th, 2016):

> "[T]here were two things I was quite keen on getting right from the start, and one was the tone of voice, and the second was that we wouldn't fall into that trap of saying <well, look, we've got this money, we've got loads of people who live in Market Harborough we need to do things, we need to do things really quickly, let's just deliver rather than actually just sit back and think about if we set up this project where's it going to be in five years time and how will it continue, who are the people who are going to take that forward when we're not there, and so how are we going to set it up for sustainability> which is where the enabling thing came in really, rather than a direct delivery thing"

From the above quote it is apparent that the first dimension, that of intention, is sometimes expressed by what the Project Manager refers to as "tone of voice". During our semi-structured interview, the Project Manager was asked to "unpack" what he meant by that phrase. He explained:

> "[I]t comes from my quite strong belief that I *don't want to badger people, hector people, not wanting to badger, hector, lecture people on climate change*, or the really heavy things, you know – <you should do this>, and <we need to solve this crisis>, <we need to …>; you know, all of these quite strong words, because from my experience you just turn a whole heap of people off by doing that. The only people who listen to you actively when you're talking like that are the people who are already engaged, who are already doing something, that's how I feel about the subject of sustainability, so setting your tone of voice from the beginning, and allowing that to run through your media, your marketing, your staff, your projects, and keeping a really tight hold on it, but keeping that in perspective, I think is

> really important, and that – yeah – sets the tone for the project really" (SH Project Manager, Semi-structured interview, 2016-04-27. Added emphasis).

The second dimension in the project's enabling ethos concerns implementation. This is elaborated on as follows in an observation by a project team member during a facilitated Action Research meeting on December 17th, 2014:

> "Some of the people have done some training through us, or they've gone away and taught themselves how to do something and then shared it with others – we've been a catalyst for them to do that".

This point was emphasised later in the same conversation by another project team member:

> "The whole point though is that it's a step towards building the relationships that will result in the Lottery targets. You can either aim straight at the targets or you can aim towards something that works towards the targets"

For the SHP team members, a seemingly high premium is placed on the enabling ethos, and appears critical to their shared sense of identity as an organisation. The team places such an emphasis on this[58] that, in a report and through several conversations with the BIG Lottery, the project admits that

> "maybe we won't hit all of the targets by the end of the project, but five years after the end of the project – hopefully – there'll just be an enormous picture that we can paint for them about how its seeded all this follow on work and how those relationships develop over the next five years" (SHP team member, Action Research meeting, 2015-03-27).

58 The outcomes associated with the SH Project have limited scope to reflect this ethos and traditional evaluation methods are not suited to give this its due weight. An approach informed by developmental evaluation methods is anticipated to be more appropriate.

The identity of the project, as seen through the dimension of its ethos, is to lay seeds for the local people of Market Harborough to have the tools, and the vehicles to realise their own sustainability, however they may define that. Even if that only happens once the project's funding has finished.

7.4.1.2. Self-reference

Identity (autonomy) in human systems is a multi-dimensional construct, and from one perspective concerns how a system sees itself, while from another concerns how others might see it. The first of these perspectives concerns how the project views itself.

What was coded in the transcripts for this parameter were self-referential statements, because these give an idea of the character and the properties the actors have of the project from within the boundary of the system. While there were a number of such self-referential statements peppered throughout the transcripts, there were some which gave key insights into the type of organisation, its character … its 'personality', more so than others. These are cited below.

> "I found that we're very different because we are essentially starting something from scratch, whereas I don't think I spoke to a single project that hadn't already got something they were building on within the area that they were working on. I might be wrong because I might have missed a project but that is the difference between us and the rest of the Communities Living Sustainably projects is that they have already – although they've organised a version or they've joined – they're building on something that's already existing" (SHP team member, Action Research meeting, 2014-07-23).

This quote illustrates one of the narratives that runs throughout the transcripts, although it tends to be more in evidence during the first two years, about the project's uniqueness, it's difference. This difference is associated less with its actual context – working in a Market Town – but rather about how it

started, effectively, from scratch. This narrative reflects on disparate clusters of actors pursuing their own areas of interest, but lacking any sense of coherence nor having established a solid basis to begin from. This narrative is quite different from how the team understand the other Communities Living Sustainably (CLS) projects which, the team maintains, already had some kind of basis or foothold to work from.

This narrative brings its own threats however. In a facilitated Action Research meeting five months later, a team member reflects on the risks involved in undertaking a large town-wide venture and their capacity to manage this, and whether doing so would elicit the support of the local food and drink businesses. To some extent, this seems to be about their legitimacy as much as their capacity, leading to the team member observing their

> "Slight feeling of wariness about how much we might be getting ourselves into if we go down that [food] branding route. So it's about being really honest about how much we can commit to something like that, and a lot more would need to come from the retailers and producers around" (SHP team member, Action Research meeting, 2014-12-17).

Without the security of something similar having been undertaken before, and without the reassurance of a coherent groundswell of support, the venture seems to be risky in terms of the project's capacity – and legitimacy – to manage it.

The project staff certainly do see themselves as a team player, identifying that it invites other actors to participate and to help support and build on their interests as much as it does to pursue indicators. This is consistent with the project's enabling ethos discussed in the previous section. In the same facilitated Action Research meeting (December 17th, 2014), a team member comments that

> "We do try to work with all existing organisations in the area, we've gone out of our way to work with trade and commerce in Harborough, and to help them build their capacity, we've initiated conversations with the local schools, and the youth centre. We've very much recognised what's there, we've gone out of way to look at what's there, what organisations there are locally"

This attempt to work with existing businesses and other organisations is to address the gap in a cohesive network of actors the project references when it speaks of starting from scratch.

As a member of the SHP Partnership Board (February 11th, 2015) reflected, the project is ambitious and this ambition might also help account for the project member's feeling of "wariness" about undertaking the food branding endeavour. The concern is that as an ambitious project, their ambition may not be supported by the available capacity or resources:

> "This project has always been bigger than the resource available to deliver it – it's extremely ambitious and I think that's what we said to the Lottery. I remember saying this to them in the interviews when they first said yes to the money, we've been really ambitious" (SHP Partnership Board member, Partnership Board meeting, 2015-02-11).

Nevertheless, the project team also sees itself as successful, even when undertaking ambitious project activities. In fact, as far as one project team member is concerned, "People have seen what we've done, and they've been pleased with what we've done. They've seen we've got the best interests of the town in mind" (Action Research meeting, 2015-03-27). What marks the project's good intentions for the town as different from those expressed by other locally-based organisations, such as the Transition Town Market Harborough (TTMH) chapter, or the Friends of the Earth? It appears that the project has a developmental economic focus, as evidenced by the following quotation:

> “There have been community energy groups before, but they’ve tended to be – what you might call - ‘hippy-type’ people who have done it because of saving the planet, and I think this [Harborough Energy] has moved in a different direction, a much more commercial direction” (SHP team member, Mid-Term Review staff meeting, 2015-12-17).

In conclusion then, the project team tends to regard itself as starting from nothing. But it sees itself as ambitious about its reach, even if that reach may at times over-extend its capacity or resource to support it. It believes that it is seen to have the best interests of the town at heart, and unlike those who may have gone before, the project is less of a ‘hippy-type’, seeking instead a more commercially viable future for its community energy offer.

7.4.1.3. Other reference (to SHP)

As noted above, the second perspective that feeds into the development of an identity concerns how a project is seen by others. This section briefly reviews the transcripts, and highlights a few illustrative examples of how the project team believes it is perceived. Broadly, these are positive narratives about being recognised and being taken seriously.

During a facilitated Action Research meeting (December 17th, 2014), a project team member reflects on what is perceived to be a change in the project’s status around the town. This is described as:

> “Having a presence that's known – we've built up that known presence by going out there, having a festival, buying into the town, attending the Xmas Fair, being part of Harborough I think has helped us, and scored good kudos with the retailers. I think that if we didn't go to the Xmas Fair we were seen to be at that, we were seen to be … I had someone from Harborough FM say <it was really good to see you at Rock on the Rec> when we did that. It's a town where it's insular, and I think everybody knows everybody else … it's just that if you want to be part of Harborough, you've got to be part of Harborough”

Being an active member of the Market Harborough community, and getting involved and being seen to be involved evidently is something that the team member believes contributes to this change in status.

This change in the quality of relationships is a recurring theme and three months later, also during a facilitated Action Research meeting (March 27th, 2015), a team member reflects during the introductory phase of the meeting that

> "it feels like something's changing with our relationship with the town at the moment. It feels like recently, there's been a few key relationships, where we've been chasing people but suddenly people have been coming to us".

A second team member picks up on this and adds that

> "The fact that we've been invited in to do Arts Fresco, we've been taken seriously it's quite a big part of the town's thing, and we've been invited to do a new thing as well, and as a potential partner with another thing".

The project team take this as illustrative that the tide might be turning in their relationship with 'key' actors in the town and interpret the invitations to participate in traditional town events as symbolic of this change.

Six months later, this positive relationship is described in terms of the project being recognised, a critical component of an identity. A project team member comments that

> "we tend to be recognised – maybe just even if it's because they've seen the Food Map then they realise that it's part of the same thing, but we've been involved in creating that" (SHP team member, Action Research meeting, 2015-09-23).

The significance of being recognised and included is evident in a project team member's reflections during the Mid-Term Review staff meeting with Rose Regeneration (December 17th, 2015):

> "the RCC [Rural Community Council] didn't have a massive presence prior to the project and SHP has come in and kind of come from nowhere, so you have to be part of the events of the town, so it did take at least a year didn't it to be invited to the Xmas Fayre, to be invited to the events which are key community focused parts of the town"

The relevance of the emerging status of the project among the 'key' actors of the town is consistent with the project's self-referential description as 'starting from scratch', here described as "com[ing] from nowhere".

However, despite the growing recognition of the project, the project still has low public visibility. As Rose Regeneration, in a feedback session with the Partnership Board (March 2nd, 2016) observed:

> "it's important from a legacy perspective, about the population of Market Harborough as a town and their engagement, for example, there is no visible day-to-day presence on the street from SHP. Some people think there ought to be a shop, where people can just pop in and talk to you about energy efficiency or whatever. I think there's an issue about local ownership and visibility".

This was one of the original proposals in the funding application but did not get realised. This decision was taken in part because of the cost overheads of having a High Street, or more visible, location, but also in part due to "not wanting to be too accessible. We wanted to actually get some work done. We wanted to be available but not too available. Not a drop in centre" (SHP team member, Mid-Term Review staff meeting, 2015-12-17). This distinction is also key in the construct of identity or autonomy – a boundary, or distinction, must be clear between the system and its medium. This is explored in the next section with reference to what the project identified as being beyond its scope.

7.4.1.4. Beyond scope (of the project)

Distinguishing what something is *not* is just as critical as identifying what it is in the generation of autonomy. This section reviews some illustrative statements from the transcripts in which the project clarifies what it is not. The negation concerns what is beyond its scope.

Typical examples that were coded include project activities that were either started, such as the food growing endeavour with the local prison, HMP Gartree, which was then abandoned, or decisions reached later on in the project about which activities from the initial wish-list it would not pursue.

One of the initial activities that the then nascent project found itself being committed to was to set up a food growing activity in partnership with the local Category B[59] prison. This was an activity the project's CLS (Communities Living Sustainably) enabler, in conjunction with the endorsement of some members of the TTMH (Transition Town Market Harborough) chapter, were keen to set up, but was beset with challenges from the start, primarily because of security issues and the nature of the prisoners the institution houses.

After almost a year and a half from the project's beginning, progress in this activity was still minimal. As the Project Manager reported to a Partnership Board meeting (May 14th, 2014): "we're not putting a huge amount of time into that. It's one of those things where we're wondering what's going to happen with it". In addition to security-related constraints, key contacts kept leaving, and due to the time of the year, time was also running short to do anything significant in terms of gardening. The Project Manager concluded that the project team would monitor the "numbers that indicate that we're on the right lines or not, and if we're not then we'll call it quits because it's not working".

59 A Category (or 'Cat') B prison is generally a detention centre for people who will not be paroled nor released until the completion of a life sentence.

Two months later, in a facilitated Action Research meeting (July 23rd, 2014), the Project Manager observed that, with respect to the HMP Gartree activity, "the practicalities were always going to be about getting enough people into the prison to get enough produce out to make it worthwhile for the wider project". Failure to accomplish this would end up with "us putting in resource to help the prison out with some activities, which is not what we are about". Taking such strategic decisions about what not to pursue is a difficult choice, but clearly not the last that the project would make.

In early 2015, at a Partnership Board meeting following some discussion, the Project Manager concluded that the "plan then is to abandon the Community Fund idea and to not fund the Harborough Currency feasibility scheme" (February 11th, 2015), in order to divert limited funds elsewhere. This was then followed up by the agreement not to attempt one of the project's original indicators with respect to "the 10% reduction [in CO_2]", and instead "recommending that we scrap that entirely because it doesn't tell us anything about the project at all" (SHP Partnership Board member, Partnership Board meeting, 2015-02-11). The key phrase in this quote is that any reduction in CO_2 bears no relation to the project itself. This is the first of a number of challenges the project encountered in the suite of indicators, and will be picked up again in a subsequent section.

However, as reported during the Mid-Term Review staff meeting with Rose Regeneration (December 17th, 2015), the project also recognised that

> "the opportunities for affecting biodiversity in a town like this, where there's very little land availability and where you've got a major project that someone else [River Welland Trust] is already delivering on the river, there's very little that we can affect".

As a consequence, the sole indicator for biodiversity in the project concerns the so-called "buzzing borders" activity,[60] and even this was re-profiled because it

60 See Indicator 5a, Table 4.3., above.

was considered by the project to be meaningless in terms of a measure of change.

7.4.1.5. Identity and boundary other

This final code is a broad reflection of utterances within the transcript that pertain to the project's identity and its boundaries, but are not well captured by the previous code designations.

As already noted, the project team sees itself as starting from scratch. As far as the project team are concerned, even though the idea for the project may have originated with the local chapter of Transition Town (TTMH), the team are insistent that "[o]rganisationally, we didn't take up space that somebody else inhabited – what we do. We haven't taken over the space that TTMH inhabit" (SHP team member, Action Research meeting, 2014-12-17). However, rather than push for the project to be known, the team members are more interested in eliding the project, as an entity *per se*, so that

> "what will end up happening though is that people will almost forget about SHP and they'll know edibLE16 and Waterloo Cottage Farm [community agriculture] and the business energy club and the PVs on the whatever" (SHP team member, Action Research, 2015-03-27).

This same emphasis on becoming 'invisible' as a specific project was re-emphasised in early 2016, during a facilitated Action Research meeting (January 7th, 2016), where the project was less important than people seeing a Market Harborough that was sustainable rather than focusing on the Sustainable Harborough Project:

> "we've always fallen into that trap of we're Lottery funded so we have to describe what we do with the Lottery fund that's the way we've always gone about it, we should change that approach, and we should talk more about what a sustainable Harborough looks like rather than what Sustainable Harborough is … that

> would probably be a neater way of tackling that – a more aspirational basis”

This approach underscores the consistency of the enabling ethos adopted by the project which stands behind the local people and organisations, seeking to raise them up rather than pursue the glory for themselves. However, such an approach is unlikely to be captured by traditional evaluation methods.

The ambitiousness of the project team and Board has already been noted. As a consequence of such ambition however, it is apparent that the project encountered some of its own limits with respect to capacity. Following an invitation to participate in the Arts Fresco town-wide event, the project recognised

> “that that was as far as we could push an event organised by us without a significant input from other people. [I]t was a really good event and I think it really showed what we can do. So it was great for the project. But yeah, we're really up against what we can do” (SHP team member, Action Research, 2015-09-23).

Being a fully-funded and non-partisan project, the team invested in the development of a local food and drink map. This map cultivated social capital among the various food and drink producers and retailers. However, as one of the stakeholders commented during the Mid-Term Review stakeholders meeting (December 17th, 2015), this may have only been possible due to the non-partisan and independent nature of the project. The stakeholder notes:

> “I think if perhaps one of the shop owners had gone around and tried to do that, there might have been hostility from other … y'know, someone who saw them as being a competitor. Whereas, the independent nature of SHP going in and speaking to people and getting them involved and once the first edition of the Map was produced, people seeing that and also wanting to get involved”.

This last cluster of coded excerpts highlights a qualitative dimension to the project's self-described enabling ethos, and helps to flesh out the project's identity operationally. It is evident that, by virtue of being independently funded, for a five year period, the project is able to present itself in a non-partisan manner. The project is able to travel between the territories delineated by other actors in a way that other organisations seeking funds or support might not have been able to do. This fluidity of social alliances, coupled with a transparent interest in promoting project activities rather than the project brand name, to become involved in the town's events, and to put the interests of the town's local economy and people forwards all seem to coalesce in a demonstration of the project's enabling ethos.

Moreover, it is apparent that the project team has a strong sense of its own identity: it has a developed narrative about its origins and its rites of passage; it is clear about what is and is not within its remit or scope, as well as a growing appreciation for its capacities and boundaries. Finally, there appears to be a reasonable consistency between its self-referential perceptions and how others see the project, all of which suggest that the autonomy of the project as a system is quite well defined.

Since a system is not so much a 'thing' as a way of talking about something that bounds it and distinguishes it from its context, or medium (Beer, 1985, 2009; Anderson and Goolishian, 1988; Midgley, 2000; Williams, 2008; Bell and Morse, 2010; Ison, 2010), on the basis of the foregoing, it is reasonable to propose that the SHP is distinguishable from its context (Market Harborough, TTMH, CLS, etc.) as a system in its own right. This would be the first and a necessary condition for the case study CBS to be considered as a learning system – that it can be satisfactorily identified *as* a system.

7.4.2. Transformation (Renewal):

This category refers to the description and processes of change. Enactive cognitive science draws on the science of complex dynamic and adaptive systems. Consequently, as one of the core ideas of autopoiesis is continuing self-production, one of the criterion one would expect to see in a second-order learning system is change. Unlike Luhmann's controversial adaptation of autopoietic theory (Blühdorn, 2000; Maturana and Poerksen, 2004; Luhmann, 2013), no case is being made here that the SHP (or any social system for that matter) is to be considered autopoietic. Only that a system is comprised of relationships both inside and outside of its boundaries, and relationships are dynamic. It is this dynamic pattern of flux that is the focus here.

7.4.2.1. Change in structure:[61]

This parameter reflects how structural changes take place but do not threaten the overall organisational coherence of the system.

During the course of the project's lifespan, there have been a number of changes at both Partnership Board and team level. At the level of the Board two key individuals have left. The first represented a charity for market towns, and the second the local housing association. Following the departure of the former Director of the Housing Association, one of the founding members of the partnership, there has been a marked lack of engagement which has had a number of repercussions on the ability of the project to realise some of its ambitions regarding addressing vulnerability, fuel poverty, and energy efficiencies. In addition to these two members of the Board, three high-level partners have ceased their involvement. As the Chair of the Partnership Board put it

61 'Structure' is here used as per autopoietic theory, referring to the unity's unique expression in time (see section 7.5.1., above).

> "my other concern would be the buy-in from other organisations, and we've lost people like the Environment Agency and Severn Trent and housing association, for me that's a bit symbolic that we've not got those people excited about what it is we're doing" (November 25th, 2015).

At the level of the project team, one member of staff left on maternity leave handing over to a cover staff who has subsequently been appointed on a full-time basis, while another member of the team joined and stayed for a few months prior to resigning, and whose role was filled by a new recruit who started in April 2015.

Primarily, these changes have been at the level of the Partnership Board, with some flux in the project team, but as these have been accounted for previously, the origin of the changes noted in this section are operational rather than in terms of governance or capacity. As such, these changes may be considered to be more set backs, or disruptions to the intended work flow.

There are a number of such disruptions across the course of the project. To some extent, one would expect these to happen in any project, and generally project managers tend to build in some level of redundancy to absorb these. Of interest with respect to this coding of the transcripts were three particular examples which were unexpected, and hence redundancy was not built into the system. The reason for these not being anticipated is because two of the changes originated from key partners, while the third was because it involved a late phase change of mind by one of the parties involved in a project collaboration.

The first of these concerned an unanticipated set back in rolling out the Community Led Planning (CLP) consultation work by the Rural Community Council – Leicestershire and Rutland (RCC) due initially by the lead officer responsible for it going on paternity leave. However, the person recruited to

take on this role did not fulfil their responsibilities which delayed the roll out, this was compounded by staff restructuring and the RCC's

> "recognition that it was proving too expensive to do the... they have a model that they use for consultation that tends to be within villages" (SHP team member, Action Research meeting, 2015-09-23).

On-going problems with the primary local housing association, a founder member of the partnership has meant that the intended Energy Connect work with the tenants on energy efficiency measures has also been indefinitely delayed due the housing association "going through their own massive structural changes" (SHP Project Manager, SHP Partnership Board meeting, 2016-03-02). However, the "risk of non-engagement from SLHA is, I think, not hitting a large part of our vulnerability[62] targets" (SHP team member, Action Research meeting, 2015-09-23).

However, the biggest single change was in the planned community-owned energy project involving the installation of solar PV panels on the roof of a local academy which was about to begin. After successful negotiations and the launch of an official and Ethex-vetted share offer for £185,000, "the money was raised but the school pulled out" at the eleventh hour citing problems with the academy's Financial Commission Agency (Project Manager, SHP Partnership Board meeting, 2016-03-02). This raised

> "the potential for reputational damage [...] but that didn't materialise – we managed to cover that off with press releases and communication with share holders. There's been some unrecoverable costs associated with the project of just under £4k".

In facilitating a stakeholder's journey towards sustainability, CBS practitioners might be able to anticipate what is involved, but will be unlikely to

62 One of the main themes underpinning the CLS fund was to address fuel poverty. The SHP team have redefined this to a broader 'vulnerability' theme.

anticipate what factors will operate as restraints (cybernetic or negative descriptions). The options that CBS practitioners have at their disposal are to attempt to reduce the more predictable restraints, such as inconvenience, expense, a lack of awareness, social isolation or a lack of support and so on. In this way, the SHP team construe their role as that of mentor or even guide to those embarking on their journeys to sustainability.

7.4.2.2. Nature of change:

Change is, in the words of the Chair of the SHP Partnership Board, a "mysterious thing":

> "You [bring about] change [...] by saying <here's an idea, here's something to do which will make people's lives better and which'll be fun to do. Do you want to join in?> And it works, and it creates a ripple in the pond. I don't think you can control what happens with those ripples and who picks them up, but essentially it's – certainly from a community perspective it's about what it's about for me, it's about we're a pebble in a pond and we're going to go and do this, and we're dropping that pebble in and we'll see what sort of change happens, in terms of the ripple, and some of those will be unintended and surprising consequences." (Chair, SHP Partnership Board, semi-structured interview, 2016-04-27).

The interviewee's view of change as ripples in a pond is a metaphor for the stochastic nature of change – one cannot predict nor predetermine what effects will arise from the processes the SHP sets in motion. However, practitioners are nevertheless constrained by the necessity of accounting for their own models of how the world is thought to work. As a consequence, practitioners are expected by funders and potential beneficiaries to articulate how they intend to achieve the funded outcomes, and how the activities the practitioners enact are related to those outcomes.

This articulation is the project's ethos, which – as discussed above – is predicated on enabling stakeholders to achieve that which interests them in

ways that will also help the practitioners achieve the funded outcomes along the way. It is this latter point that constrains the decision-making processes of the practitioners in terms of how they work with stakeholders, the choice of stakeholders they work with, and the activity themes that the practitioners support and pursue.

It has already been established that sustainability is a contested concept, that dealing with climate change has become highly politicised (Giddens, 2011), and that eliciting behaviour change to facilitate energy efficiency yields variable results. As one member of the Partnership Board explained:

> "[Sustainability] is not regulation, it's about changing people's mind sets and people beginning to care about this area, and to think longer term. It's about what people do and how they do it. They just don't understand the implications of what they do in their everyday life. They don't understand the consequences of their actions. Maybe it's just connecting what they're already taught – the people who are currently between 8 and 18 – and that means connecting what they learn in science, what they learn in humanities, with how to lead a better life, making those connections, equipping them with the knowledge so that they can have a proper idea about these issues themselves" (SHP Partnership Board member, semi-structured interview, 2016-05-06).

This interviewee draws together the linkages across disciplines and connects these, in turn, with a broader ethics of "how to lead a better life" that will have an emphasis on being more sustainable. The challenge for a project, such as the Sustainable Harborough Project (SHP) is realising these demands operationally. The project may be aspirational and ambitious, but this needs to be tempered with caution. As the Chair of the Partnership Board advises:

> "So I think you've got to be cautious about this idea that we're going to do this and the world's going to be different. A bit of the world'll be different, people might be different and some thing might be very different, but you probably won't be able to

> connect it with [the project] when that happens" (Chair, SHP Partnership Board, semi-structured interview, 2016-04-27).

Change is understood as "mysterious" and stochastic, and the degree of influence that a project such as the SHP might trigger is small, and may not even be attributable to any given thing that the project actually did.

These insights hint at the complexity of the circumstances into which projects are deployed. Recalling Burns' (Burns, 2010; Burns and Worsley, 2015; Dunkley and Franklin, 2017) observation that if the design of a project is linear and reductionistic, it will not be able to address problems in contexts that are complex and non-linear, it is troubling to note that even two commonly referred to and leading texts on evaluating international development projects contain no mention of 'complexity', 'developmental', nor 'learning' in either the contents or index, preferring instead to focus on the (linear) logic of a programme's theory of change (Morra-Imas and Rist, 2009; Gertler *et al.*, 2011).The insights into change and the degree of influence a project might exert given above are seemingly at odds with the canonical approaches to evaluation.

With this tension in mind, it is useful to consider the next code category which concerns reflexivity. This category tracks evidence of the project's self-determination across five codes. The relevance here is how the project needed to modify several of the original indicators once it got underway and recognised the complexity of the context it was immersed within versus the relative linearity and reductionism of its design from the perspective of its indicator and outcomes framework. In addition to this though, reflexivity is also the process whereby the project begins to become self-aware, which is a necessary pre-condition for a second-order, that is an observing (von Foerster and Broecker, 2010; Pangaro, 2011), system.

7.4.3. Reflexivity (Deliberate interventions in causal loops):

The third category is the second of the three core concepts concerning second-order systems, the first being Identity (8.4.1., above). Reflexivity is a mode of self-awareness evidenced through the process of a unity deliberately intervening to amend or change the course of its direction. As such, this refers to the notion of teleology, that a system may be defined by its purposefulness, rather than by a passive compliance with any initial design parameters.

In section 6.5.2., above, the concept of structure determinism was introduced. This concept posits that a system acts not in response to pressures from its environment, but from its own structural compensations to conserve its homoeostasis. Maturana and Varela (1992) use the analogy of the sub-mariner who is oblivious to the rocks and reefs seen by (external) observers but who successfully navigates through these because the mariner is simply manipulating (internal) controls to maintain a particular set of conditions on the instrument panel.

This code category tracks how the SHP induces modifications to its developmental trajectory, thereby influencing the realisation of its teleology (structure determinism).

7.4.3.1. Defining purpose – Teleology

The SH Project inherited a set of indicators and outcomes (see Table 4.1., above), but it wasn't very long into the life of the project that the team, and Partnership Board, began to identify concerns with how the framework had been defined. Two broad classes of problems were identified. The first concerned the actual numbers, in terms of scale and accessibility of the data to monitor impacts. The second concerned what was not being addressed by the framework which was of a more qualitative nature, and was seen by the project to be as important as the quantitative measures. These are discussed below.

The first of these concerns was summarised by a member of the SHP Partnership Board during a meeting (November 25th, 2015) as pertaining to "the metrics of the project did seem to be the biggest area where we were thinking that there's a problem really". This summary was based on experiences of the project team struggling with the quantitative side of the monitoring framework.

For example the indicator for Outcome 3, as discussed during a Partnership Board meeting (September 10th, 2014), which is the "economic value of local natural resources used per year" to a value of £750,000 was described as

> "quite a difficult thing to measure and a very difficult thing to achieve and might not be the right sort of thing to be looking at things in a different way might be more realistic".

This concern was summarised by a staff member during the Mid-term Review staff meeting with Rose Regeneration (December 17th, 2015): "the economic target was one, a nightmare to even try to start counting, and then a scary target on top of that".

A further example of an indicator that posed considerable challenges for the project was the reduction of 1,000 tonnes of CO_2 over five years, and which had caused the project to be "struggling around the edges of [it] for a while" (Project Manager, SHP Partnership Board meeting, 2015-02-11). Part of the challenge was because relevant data sets for the indicator are "always two years behind, and may be due to reasons that have nothing to do with the project". The proposed solution to this was to:

> "have a kilowatt target for renewable energy that we can attach to Harborough Energy and we can then convert that into carbon dioxide, but it's a target that is actually focused on the project, it's focused on doing something and is measurable – eminently more measurable than the indicator is at the moment and

> obviously less scary as well" (Project Manager, SHP Partnership Board meeting, 2015-02-11).

In addition to these two examples, a further two indicators required amending. The first of these concerned the biodiversity indicator, the so-called "Buzzing borders". During the February 11th, 2015 Partnership Board meeting, the Project Manager acknowledged that

> "[Biodiversity] is not a big part of the project. I don't think it's where our energy is best spent at the moment trying to find a way of showing changes in biodiversity in Market Harborough"

while the Chair of the Partnership Board acknowledged that, from his experience, "[m]easuring biodiversity at the local level is a real challenge to come up with indicators that are robust, meaningful, and affordable to monitor".

Consequently, it was agreed at this meeting that this indicator would be re-profiled "to be a number of borders with a certain set of dimensions. The outcome is not a measure of increase in the biodiversity of Market Harborough".

The last of the four indicators that the project found problematic concerned the 10% in CO_2 emissions, with the Project Manager proposing at the same Board meeting (February 11th, 2015) that

> "[i]n terms of the 10% reduction, we're recommending that we scrap that entirely because it doesn't tell us anything about the project at all".

It was the early recognition that the outcomes framework did not really reflect the purpose of the project which lead to the Partnership Board agreeing a revised Vision Statement (April 10th, 2013), as below:

> "As a result of Sustainable Harborough the Market Harborough community (businesses, schools, communities, groups and individuals) will be taking responsibility for making Market

Harborough more sustainable, be supporting each other to deliver improvements and be a beacon for other communities to improve their own sustainability.

We will know that we have been successful if:

•There is a significant reduction in carbon emissions from the town
•The town is more resilient to the impacts of climate change
•The physical environment of the town and particularly its river are improved
•New enterprises have been established to continue to support and deliver improvements in the town
•There are credible plans, informed and led by the Market Harborough community, for continuing the work started through the Challenge"

These changes to the project's purpose were summarised at the Mid-Term Review stakeholders' meeting with Rose Regeneration (December 17th, 2015):

"three or four of the original targets have been morphed slightly from where they started – there was one about bees, an increase in the bee count across what are described as buzzing borders, there was one around the CO_2 emissions and one around – a huge volume target – around economic activity"

The revised outcome and indicator matrix is given in Table 7.2., below. Changes are in bold:

Outcomes	Key	Indicator	Measure	Value
Outcome 1. Improve knowledge and skills on sustainable living amongst the local community and increase public support and participation in activities to improve local sustainability	1a	Number of people participating as volunteers or community champions	Nº of people	300
	1b	Number of people reporting improved knowledge or skills	Nº of people	1000
Outcome 2. Bring about practical action and behaviour change to reduce the	2a	**Reduction in CO2 emissions due to energy use in MH (to be measured but not an indicator of success/failure)**	**%age**	**10%**

Outcomes	Key	Indicator	Measure	Value
environmental impact and carbon emissions of local households, businesses and schools	2b	Reduction in CO_2 emissions per yr due to project	Tonnes	1000
	2c	No of interventions carried out by households	Number	450
	2d	No of interventions carried out by businesses	Number	100
	2e	No of interventions carried out by schools	Number	450
Outcome 3. Increase the resilience of the local community to environmental change, through increased community use of local natural resources and assistance for vulnerable people to manage changes in the local environment and increasing food and fuel costs	3a	**Increase among Market Harborough shoppers who recognise local food branding**	**Annual percentage increase over 2015 baseline**	**19% of base-line**
	3b	**Increase in the number of local food businesses participating in the Food and Drink map over the baseline**	**Annual percentage increase over 2015 baseline**	**38% of base-line**
	3c	**Increase among MH shoppers who report buying from local/independent food sellers over the baseline**	**Annual percentage increase over 2015 baseline**	**63.9% of base-line**
	3d	No of vulnerable individuals and households with reduced food and fuel costs	Nº of people	250
Outcome 4. Establish local enterprises that harness local resources and increase local trade to sustain and develop the local economy	4a	Increased annual value of local trade due to project	Value in £	100000
	4b	Number of new community enterprises	Number	6
Outcome 5. Preserve and improve biodiversity via the community including public and private spaces and the River Welland	5a	**Creation of 10 buzzing borders of at least 5m in length**	**Number**	**10**
Outcome 6. Improve and disseminate knowledge across UK communities on how to improve sustainability in an average sized UK market town, targeting market towns in particular	6a	No of people from other communities reached via dissemination activities	Nº of people	200
	6b	No of public reports produced describing learning from project	Number	5

Table 7.2. *Revised indicator set (amendments in bold text)*

In addition to the changes in the quantitative dimensions of the project, the project also felt that what the monitoring framework required the project to record did not actually reflect what the project recognised as being a crucial component of its contribution. In the February 11th, 2015 Partnership Board meeting, the Project Manager observes that the project has:

> "all of these numbers in the Lottery End of Year report, but some of the best stuff that we're doing isn't adequately reflected within these numbers, and so some of the messages back to the Lottery on this learning project will be around *how do we capture the quality of the project and not just the quantity of the project*, because there's a lot of quality within what we're doing and we want to adequately pass that onto Lottery, and then help them to change the way they get projects to report".

The above excerpts highlight some of the concerns the project had about the indicators that had originally been designed for the project to monitor its activities against. It is clear that the project is not against the idea of monitoring progress; rather the concern is about the scale or the nature of the indicators being used. These concerns echo those reported in the scant literature on practitioner experiences with monitoring and evaluation frameworks. That the SHP took a pro-active approach and began to critically challenge and re-profile the indicators suggests that the project assumed ownership over the course of its developmental trajectory. By altering its purpose – its teleology – the project demonstrates reflexivity.

7.4.3.2. Causality

Evaluation practice tracks a project's development through its logic model or its theory of change (Weiss, 1995). A theory of change maps out the kind of connection, the path between what the project's activities are doing and the outcomes and the intended impact, and the steps that the project is going to follow to make that change happen. Evaluation is, in effect, an assessment of the degree of alignment between diagnostic and prognostic framing in the

context of a project's design and the understanding of the nature of the problem and context.

In a facilitated Action Research meeting (2014-07-23), a member of the SHP team discussed how they see the causal pathways unfolding in terms of the generation of a project:

> "Generally there are always two ways things happen. Either a group of interested people come together and make it happen and so it starts with nothing; or it's pump-primed with funding and a lot of effort and the ground work is done first and then they try and get a group involved in it. Those are the two ways things happen. We're trying to do it the first way [from scratch]".

The Sustainable Harborough Project (SHP) articulates an assumption that people embark on their own journeys of sustainability from different points of interest and motivation. Over the course of facilitated Action Research meetings with the team, several such points have been raised, including householders and businesses reducing money on energy bills, interest in a local food economy and sourcing locally produced food for health and quality assurance, realising a return on investment from investing in community-owned energy, and so on. From these varying points of origin, it is apparent that the project understands the journey towards sustainability is not pre-determined, and may not even be predictable.

The challenge, from the project's perspective is how to help people begin that journey. The Project manager describes this with reference to how "our tone of voice helps lay the foundations for people to start to become involved" (Action Research meeting, 2014-12-17). The Project Manager elaborates on this during the Theory of Change workshop facilitated by the New Economics Foundation (NEF, 2014-11-17), by describing their approach to engagement characterised by

> “the way we talk to people, the way we try and develop projects without sort of hitting people over the head with the sustainability stick, talking about what people are interested in and what matters to them”.

This is a perspective of engagement that is endorsed by the Partnership Board as well. However, it is not without its challenges, as a project Board member observed

> “it always seems to me, after year one, the project has actually been developing quite well. But it’s *very much related to the interests and desires of the people out there*, and how you get the people involved, and really want to be involved, and you can’t expect a project like this to draw in masses of people, who may have a fleeting interest” (SHP Partnership Board meeting, 2015-11-25).

These excerpts demonstrate a reasonable coherence between the ethos of the project and its theory of change. It involves a focus on enabling people to do more about what interests them. So while Market Harborough may not be

> “sustainable now, [...] there are different ways we can approach that depending on where we start from or what opportunities arise [and] it's very much about taking the opportunities” (Partnership Board member, semi-structured interview, 2016-04-26).

From this perspective then, a theory of change is “not about persuading people, [...] change happens because you do things and they are seen as good and valuable. And so other people want to be associated, and claim some of the space and join in” (Chair, SHP Partnership Board, semi-structured interview, 2016-04-27). Change is a basin of attraction.

7.4.3.3. Reflective practice:

Reflective practice is a way of working in which one critically reviews and analyses one's decisions and practices in light of theory and experience in order to generate ideas and learning.

While evidence of reflective practice has already been presented in some of the previous excerpts, this code seeks to demonstrate the degree to which critical self-analysis is undertaken by the project. It is also important in the process not to pre-empt some of the latter codes – such as single and double-loop learning. The following quotes should clarify the distinction.

By the middle of 2014, the project was beginning to express doubt about whether its enabling ethos would be sufficient to reach the specified indicators. Although quite lengthy, this concern is expressed in the following excerpt from a facilitated Action Research meeting (2014-07-23) in a discussion around the challenges of domestic energy efficiency:

> "We've not made a start on it; we've made a start on the energy efficiency workshops but putting on a workshop and advertising it, isn't … doesn't seem to be working, doesn't seem to be getting the numbers. So, there's one question around 'how do we try and get an audience to something like that?'. The next question, I suppose, is 'how do we make the most of the partnership with Seven Locks Housing?', which is kind of coming through the Energy Connect meeting, but it might be worth pre-empting what comes next or thinking what comes next with that. And then the third one is around the freebies, and which is 'Is there a nice, simple mechanism we can put in place that will give stuff to people that will feed into the Lottery targets and which will – just – kick start something … kick-start some relationships with people or … if nothing else, it might just hit some of the Lottery targets, and is that enough? Sometimes … I think with our project so far we've been looking for a lot of things from the things that we've set up, so the groups we've been wanting people to help take some projects forward, and to start taking some leadership, and become directors, and hitting Lottery targets, and generating future income and a lot of different things and actually maybe if we strip some stuff back is

> it okay to just spend money on hitting Lottery targets, and that's all? Maybe that's alright for some things?"

Here the team member identifies that the project has yet to make any substantive progress against this objective, wondering aloud if there are better ways of tackling this strategically. The experience has been that there has been low turn-out at seminars and workshops on domestic energy efficiency, resulting in cancellations of scheduled events. Consequently, more emphasis has been placed on working with the local housing association (HA). However, due to the managerial restructuring of the HA, that activity is not progressing either. With few other options available at the time, the team member wonders if it is possible to invest some of the project fund in directly chasing the indicators by handing out 'freebies'. To do so, however, means giving up on their enabling ethos in favour of a straight delivery mechanism, and this raises the prospect that there will be no longer term change arising from such a tactic.

Later in the year, the energy-related activities seemed to be faring no better, with a team member commenting during a facilitated Action Research meeting (2014-12-17) that with respect to:

> "community energy generation … there's been a couple of glitches with that, including setting up of the Co-op hasn't been going very well, setting up of our first legal entity hasn't been going very well, also our first potential project, the anaerobic digester generation project, progress on it keeps getting delayed, we can't get through to the neighbours of the premises where we hoped to implement the AD system – the gliding club."

The project team seem to be encountering difficulties pursuant to their decision about how to approach these activities, with a litany of failures, false starts, and an absence of progress.

Even a year later, following on-going difficulties trying to engage the HA, the Project Manager reported at a Partnership Board (2016-03-02) that the project had attempted to broaden its options through having:

> "a conversation with another staff member of SLHA who was doing an affordable warmth strategy for SLHA, so I offered our assistance for helping with that and he seems quite up for that. It might be that as we're offering assistance, we can write things into the Affordable Warmth strategy that ticks our boxes as well".

As these excerpts suggest, the project recognises the challenges it faces in making any progress with some of the activities, and critically considers its approach. In the light of these concerns, the project explores a range of options, keeps persevering with some of its main partners, and explores new avenues for engagement through which it can help a partner organisation reach its objectives. This helps further SHP's own ambitions.

7.4.3.4. Dealing with uncertainty

One of the properties of complexity is that, in the absence of linear causality, the window for accurately anticipating future events is curtailed, leaving events subject to significant chance and stochasticity. How a project responds to uncertainty and unpredictability is a strong parameter for its reflexivity, which is associated with the following code category, viability.

Because the SHP is framed as a test-and-learn project, one might anticipate a relatively high level of uncertainty about the effective performance of the project, what interventions and approaches will work, and how, and how well, the project engages the local population meaningfully. This code tracks evidence from the transcripts to explore these questions.

There is a tension in designing robust monitoring systems that the time invested in pinning down what is to be monitored diminishes the time available

to engage in those very activities to be monitored. This is a variant on the old dilemma of whether to "fish or cut bait". The tension is in knowing that one's definitions are sufficiently robust to withstand critical scrutiny but not so robust that collecting data becomes too onerous and undoable. This tension underpins a reflection by a SHP team member during a facilitated Action Research meeting (2014-11-19):

> "My understanding of this part of M&E work is to provide some feedback to BIG Lottery at the end of the programme as to what has been achieved and what have we learned. Is there a danger that we'll spend a long time figuring out how we're going to measure this but there'll be nothing to measure because it's all happened? Is there a risk that we'll not nail it down quickly enough to be able to use it to evaluate the impact of our activity?"

One way of attempting to resolve uncertainty is through gathering information by increasing the data sets one accesses. This may sometimes become a process of trying to count everything in sight in the hope that at some point in the future it will all make sense[63]. The challenge seems to be however in being able to discriminate whether what one is counting is what one *should* be counting, both in terms of the validity and rigour of data vis-à-vis the monitoring framework, but also in terms of whether it is an epiphenomenon rather than the actual phenomenon of interest. For example, if one is hoping to measure improvements in knowledge and skills, the matter is far more complicated than simply counting how many people attend a meeting, since attendance is an epiphenomenon and not the process one is interested in. In fact, there may not be a relation between attendance at a meeting and improving knowledge, especially given how difficult it is for people to improve

63 This also reflects my own strategy during the earlier phase of my research process. As I waited for the research question to take shape, I went through, what felt at the time, a protracted phase of capturing everything because I didn't know what would end up being relevant and I felt some reassurance in the face of the uncertainty of my research journey in thinking that, when things began to make sense, I would be able to sort what was relevant from what wasn't. As a research strategy this is okay, although it can lead to information overload which can exacerbate the confusion and uncertainty.

their knowledge outside of practice and application which rarely occurs in the context of a meeting.

This challenge is illustrated in the following excerpt by a team member during an early facilitated Action Research meeting (2014-04-02), and gives a sense of how quickly definitional matters become entangled when theoretical precepts encounter practical application:

> “In our minds, we're counting certain people as volunteers as being those people we might get to fill in a volunteer form, but some people who are participating as volunteers but who we wouldn't get to fill in a volunteer form we should still be counting and they wouldn't necessarily appear on the volunteer database. So then we decided that we would put them on the volunteer database, even though they hadn't filled in a form … is that right?”

The above quote can be paraphrased as ‘when is a volunteer not a volunteer?’ and at what point does one become or cease being one? Someone might complete the requisite forms and never volunteer, or someone might only volunteer once. From the perspective of a project, defining these issues might be glossed over: the person fills in a form, therefore their identity undergoes a shift from a member of the non-stakeholder to volunteer. But, if the data is to have validity, upon closer examination this transition in a person’s status lacks clarification.

Perhaps as a response to the difficulties posed by these kinds of definitional uncertainties, the Project manager developed a monitoring strategy that seems to work insofar as it passes the burden of definitional accuracy up the accountability chain to the funding body. In a Partnership Board meeting (2015-02-11) one year after the above quote, the Project Manager reveals this strategy for dealing with the complexity and consequent uncertainty of monitoring:

> "I've just reported everything to them [Lottery] and have just been clear about what that number actually represents, so if they want to discount some of that that's up to them to decide to do that, but I'm showing my workings. This is a solution or compromise between pressure to make the numbers look really good and for the numbers to be really robust."

It may not be the most elegant solution, but it is a pragmatic compromise between the need to report on progress for purposes of transparency and accountability and the constraints of the reporting framework that translates process and relationship qualities into countable and analytic measures. As a Board member observed towards the end of this same year in a Partnership Board meeting (2015-11-25):

> "If someone's actively engaging in something, it's easier to ask them what they've done differently or ask them how their behaviour's changed or what impact it's had on their life. But, for a project like this where subtle changes across a lot of people could have a big impact but there's no way of determining one, if that's an impact that you've created or two, if it's actually happened."

Uncertainty and how a project responds to it are useful parameters with which to consider a project's reflexivity; that is, how a project takes control of its own developmental trajectory. As these quotes suggest, the attempt to resolve uncertainty is a process of adaptation which, while not eliminating it, can reduce the scale and quality of the problem space.

7.4.3.5. Authority and power:

This code recognises the constitutive effects (power) of knowledge claims (Foucault, 1980; Deleuze, 1988a; Lövbrand, Stripple and Wiman, 2009). The code reflects that, in human practice, knowledge claims, boundary setting, practices of inclusion and exclusion, who is marginalised and silenced and who is given the space to speak and be heard are all intensely political processes and the lynchpin of ethics. The history of the project in terms of its development,

as recounted in section 4.2.1. above, evidences some of these political tensions, particularly between the two different cultures of the local Transition Town chapter (TTMH) and the charity (RCC) required by BIG Lottery to act as an accountable senior partner for the purposes of the bid, succinctly described thus:

> "TTMH with ownership, initiating the idea, but the formal ownership is with RCC an organisation with a governance culture" (SHP staff member, Action Research, 2014-04-02).

One of my supervisors, reflecting on the proposal that goals for projects such as the SHP should come from the community, pointed out that

> "the vision for the project was driven by members of TTMH who had been living locally for many years" (Dr Andrew Reeves, personal correspondence, December 15th, 2016).

While in principle the original visions of the TTMH, as embedded members of the Market Harborough community, should have (ideally) reflected the aspirations common to the residents of Market Harborough, this assumption seems to be in dispute. In discussing who should hold and be responsible for leading the project, a team member expressed the following opinion:

> "Why should it [the project] be held by TTMH? Are they a representative group? I'd say not. They should definitely play a part in the governance of that [the project], be on management boards, etc., but they shouldn't be the owners of them. Because it needs to work for the whole of [Market Harborough]. The point is, we're trying to create stuff that works for the whole of [Market Harborough] not just for [TTMH]" (SHP staff team member, Action Research, 2014-04-02).

While the project was initiated by the local Transition Town chapter, this chapter represented the interests and enthusiasms of approximately thirteen people. Moreover, there may also be the concern that the aspirations of a Transition Town chapter may not coincide with those of the rest of the community, given

the orientation of the Transition Town network towards an anticipation of Peak Oil and voluntary simplicity as vehicles through which to attain a smaller ecological footprint and to reduce climate change (Brangwyn and Hopkins, 2008; Hopkins, 2008).

From the perspective of TTMH, the emphasis is more overtly political. From interviews with representatives of TTMH, the history of tensions between TTMH and the RCC is recalled. From this perspective:

> "[T]he feeling with the TTMH group was that the RCC actually almost like pushed TTMH to one side and took over the whole thing. So we weren't the main players. From being the main players, and inviting the RCC to come in with us, it became the RCC being the main players and TTMH was kind of sidelined, that was our perspective." (TTMH representative, Semi-structured interview, 2016-04-26).

This informant's experience suggests a power differential that the TTMH was unable to respond to adequately:

> "Because the RCC have resources, they have money, they have people, and they have an official status; whereas the TTMH group has no money, and just has voluntary effort, and no official status. And through those groups coming together, the RCC was able to exert itself and take it over, that was our perspective." (TTMH representative, Semi-structured interview, 2016-04-26).

While the bid development process necessitated the involvement of a formal, organised body like the RCC, the TTMH representative describes this only as:

> "an element of Lottery wanting to deal with an official, organised body, and that might have been the case, but the effect of it was that TTMH felt it had been pushed to one side, and it took time for things to, for fences to be mended" (TTMH representative, Semi-structured interview, 2016-04-26).

But, as the informant continues, this process of the RCC being perceived as taking over is thought to have

> "begun at the bid development stage, the RCC had kind of taken [inaudible]. There was an amount of funding that was given to develop the bid further, and that was the opening, that was the opportunity for the RCC to come and take control then, at that point" (TTMH representative, Semi-structured interview, 2016-04-26).

Although the TTMH informant attributes this 'take over' to RCC being attracted to the opportunity to access the funding resource for developing the bid, from the perspective of one of RCC's principal developers of the bid, there was no evidence that the TTMH had the requisite skills to work up the application proposal, and instead generated a "wish list", no business plans but only "visions" (Informant, Action Research, 2014-04-02).

As recounted in section 4.2.1., above, this experience led the TTMH to feel marginalised and excluded and contributed to a crisis of identity and purpose. It is within the realms of speculation to entertain how the developmental trajectory of the project might have been different had the TTMH partnered with another charity rather than the RCC. However, the Board and the team have demonstrated a willingness and a practice of attempting to share decision-making with the TTMH members, and many of the chapter are involved in the click-and-collect food hub, edibLE16, and some also occupy positions on the Board of Harborough Solar One, a community-owned energy SME. They are represented on the Partnership Board as well and through these avenues have an opportunity for their voices to be heard.

Across these five codes, the degree to which the SH Project exhibits reflexivity has been tracked. It is apparent that the Project, through the team and Partnership Board members, has demonstrated reflexivity in its practice, meaning that it has shown self-awareness and attempted to influence the

course of its developmental trajectory and to affect its purposes, defining itself according to its purposes rather than by its causes. That is, the project – as a system – is teleologically determined, expressed through its vision statement as an aspiration to be defined by its intrinsic purpose and not by its extrinsic causes, which in this instance would equate to the reasons the project came into being originally. It is perhaps this shift away from an extrinsic causality, of being set into motion to 'blindly' follow its initial goals, defined by its outcomes and indicator framework and its TTMH-inspired vision, towards an intrinsic teleology determined by what a wider representative cluster of Market Harborough wanted to see happen and the enabling ethos the project has endorsed, that constitutes the most compelling evidence that SHP emerges as a second-order system.

The following set of codes explore the viability of SHP, where viability is understood in the context of enactive cognition as a system's effective action. Effective action concerns the capacity for a system to operate within its domain in which it is specified while conserving its autonomy.

7.4.4. Viability (Knowing as viable behaviour):

The enactive conception of cognition signals a radical break from the so-called second wave cognitive science, connectionism, and the first-wave cognitivism, or the computational theory of mind. As such, it was this that makes enactive cognitive science fit for the purposes here of accounting for the complexity of a post-normal conception of the world. Cognition is, according to enactive theory, effective action relative to the domain within which a system realises itself and conserves its autonomy.

In other words, cognition concerns the maintenance of viability as a system within a medium. A learning system may be characterised as a cognitive system, and since the enactive account specifies that this description of cognition holds for organisms with or without a nervous system, it is this that

has made the notion of enaction an interesting proposition for research in AI (artificial intelligence) (Froese and Ziemke, 2009; McGann, De Jaegher and Di Paolo, 2013) and corporate organisations (Limone and Bastias, 2006; Goldspink and Kay, 2009; Hall, Nousala and Kilpatrick, 2009). This category tracks how the project identifies, calibrates, and maintains (conserves) its viability relative to its operational domain.

7.4.4.1. Relevance to perceived need:

One dimension to the parameter of viability when it concerns a sustainability project is its relation to a perceived need. Does the project fulfil a function that is relevant to its medium of operation, or, does it *fit*?

The concern about fitting the (first order) design to the context of operation is captured in the following reflection by a member of the SHP staff team during a facilitated Action Research meeting:

> "we've come along and imposed this million pound project on Harborough. We don't actually know if any of them actually wanted it, and so a certain amount of it needs to be steered by what they want to do, and projects will develop based on the interest and the number of people who get involved in doing stuff" (SHP staff member, Action Research meeting, 2014-07-23).

The above-cited staff team member expresses two critical points. The first alludes to the degree of pre-project consultation and research on which the project application was based. The second identifies the degree of fit between the assumed needs and interests of the area and the offer of the project. The second point elaborates more fully on the theme here of how the project exhibits a shift toward a second order learning system that begins to incorporate the interests of the area into the design processes of the project itself.

In pursuit of having local interest shape the direction of the project's activities, over time it became increasingly apparent that the primary stakeholder with whom the project would work the most closely were the business communities. There are two illustrations of the project becoming aware of the needs of local businesses which, for the most part are small to medium-sized.

The first illustration of the need for engagement with the business community is discussed in relation to what is perceived to be a "massive gap" that small and medium sized businesses "fall into" in terms of energy efficiencies. This is

> "because there's no legislation, they don't have the carbon savings that are, that can be commoditised [sic], they don't have the time to invest in doing things and they don't have the money to invest in doing things. All four of those things are big, big reasons not to do it" (SHP team member, Action Research meeting, 2014-12-17).

It was this recognition of need that prompted the project to emphasise the Business Energy Efficiency network and the Business Energy Club, both of which provided an opportunity for businesses to come together to identify and address common challenges, and to evolve an identity of themselves as a community.

The second illustration of the need for engagement concerns vulnerable individuals. This need was already identified as part of the original terms for the fund, but in a town such as Market Harborough it raises particular challenges that had not been anticipated. In reflecting on a public workshop, one of the SHP team members, during a facilitated Action Research meeting (2016-01-07) notes that:

> "We had somebody there from the Citizens' Advice Bureau and they have exactly the same problem – they cannot get to the

> people [in need]. Someone from the Credit Union said the same, they also struggle to get to the right [client group], which was quite interesting. A lot of the people there came to the realisation that Harborough doesn't have a council estate, and the churches said that they have the same problem, they don't have access to the people who are in the hardest … so while there is no answer as such, we're not alone"

As a result, this commonly identified problem adds a further layer of complication: while the need is recognised, getting below the level of recognition to actually address it meaningfully is a challenge that, seemingly, few established third sector organisations have been able to meet.

This isn't a newly discovered challenge. At the Mid-Term Review staff meeting with Rose Regeneration (2015-12-17), for example, a staff member noted that trying to tackle the issue of vulnerability was already a "priority for the future [...] to develop some demonstration fuel poverty project, that's a priority for the next two years to deliver something on that." The challenges to accomplishing this however were identified as being due to "the SLHA factor, and part of it is just the difficulty in identifying how we find people who are classed as vulnerable".

The project finds itself in the difficult position of being aware of two broad groups of needs. On the one hand, small to medium-sized businesses have specific needs with respect to managing energy efficiencies. This is a need that the project is able to respond to and address, in part because the businesses are both more visible and more willing to engage. The second group of need is the vulnerable resident. This second group is less easily identified as a community, because they are dispersed across the town, are not well known (although the existence of the group as a socio-economic sector is known, they are not known at an individual level), and also tend not to engage.

As a result, the project can really only claim that they are relevant to part, but not all, of the perceived need in their medium that confers viability.

However, as illustrated in one of the earlier quotes, this challenge is by no means unique nor restricted to the project alone. It does influence the emphasis placed on their activities however.

7.4.4.2. Contribution to prognostic frame

Retaining terminology introduced in Chapter 2 from social movements research, the notion of a prognostic frame is the basin of attraction around which efforts are converged to address a problem. The prognostic framing is considered to be the remedy, or amelioration, for a problem diagnosis.

For the purposes of this coding, one can expect to see a reasonable degree of coherence between how the problem is defined and understood and the nature of the proposed response. From section 8.4.4.1., above, it is evident that, from the perspective of the SHP, the diagnostic framing concerns business needs around energy efficiency work that is appropriately scaled, and addressing the socio-economic vulnerability of a poorly-defined and hard-to-find and reach sector of the Market Harborough community. These are the two most well articulated problems. However, it is also evident that the project identifies itself as responding to other problems that were not articulated in the foregoing section.

These problems are written into the monitoring framework, but have also emerged through the work of the project in Market Harborough over time. For example, despite attempting to reach out to householders and businesses through the two main public consultation events, i.e.,

> “the energy forum and the food forum at the beginnings of the project, and we invited people to it and asked what they want, and actually in reality we had a handful of people from households – people who live in the town, but in reality it was nearly businesses who turned up to both” (SHP team member, Focus group, 2016-07-12).

If the project is predicated on an enabling ethos, to go with the energy and interests of those who want to engage, it is apparent from this quote that when it came to both the two main activity streams, energy and food, local businesses were the most engaged and the most interested. The logic of the project's response is clear: if the businesses show the interest and the willingness to engage, then it is with the businesses that the project should work because that is the expressed need.

This was not what the project team members had anticipated they would be doing however:

> "We've pursued business relationships more than I thought we would actually. I don't know if it was particularly planned or not, but we have pursued businesses more – it probably was deliberate – I suppose we identified business energy efficiency quite early on in the energy forum. We identified the want to match up retailers and producers quite early on, so that leads you to working with businesses I suppose" (SHP team member, Action Research, 2015-03-27).

Nevertheless, it has been through their work with businesses, particularly with the food-related businesses, that has garnered the most success for the project. Consequently, from this perspective, the success of the Local Food and Drink Map, their work with Arts Fresco, the Food Labelling legislative seminar, and their most recent venture into local food branding and linking this with tourism, is indicative that perhaps the problem of addressing socio-economic vulnerability in a town like Market Harborough is less of a problem than the need to help rejuvenate a local mostly independent small and medium sized business economy, and to provide a means for this to consolidate around a common theme.

If a project is to be true to its ethos of enabling stakeholders to actualise their interests, then doing so means going with that, even if that takes the

project off in a direction, working with stakeholders, it hadn't anticipated. The prognostic framing emerges and evolves, and is not what it was originally staked out to be: working with vulnerable residents. Or rather, the definition of the problem concerning 'vulnerability' has shifted to now refer to (potentially vulnerable) small and medium-sized businesses.

It is the degree of flexibility evidenced by the project in relation to the perception of need and amelioration that suggests that the project demonstrates viability relative to its operational domain.

7.4.4.3. Legacy planning

Viability is not only about how flexible and responsive a project is to its medium of operation. It also concerns its endurance over time, in other words what the project's lasting legacy might be and how this is being planned for. This code tracks such planning.

The idea of a legacy for the project was written into the original Delivery Plan (RCC, 2012), but it was through the recommendation of a founder Board member that the project looked past the funding period and planned for it earlier on in the project's lifespan. However, the concern with the project's legacy seems to be woven deeper into the fabric of its ethos, as this comment from the Project Manager suggests:

> "if we don't have funding after five years, where's the million pounds gone? It might have gone into doing some nice things, but if we can continue to do stuff afterwards, then hopefully people will see it as a more worthwhile investment in Market Harborough. And again, that came from the Board, so CW [then, Action for Market Towns] in particular was really interested in looking at that financial sustainability, and looking at it early, and planning for it, and almost building a business plan that lasts for the next ten years. And again DB [former Director of Seven Locks Housing Association] who lives and works in Market Harborough also felt the pressure to invest, imagining people

> coming up to her in the street and asking <so what did happen to that million pounds?>, so feeling that pressure to use it wisely" (NEF Theory of Change workshop, 2014-11-17).

A number of meetings were held during which Board members and the project team met to discuss the post-funding identity and contribution of the project, and to some extent these conversations are continuing. Consequently, there is no question that the project sees itself as having some kind of legacy; rather, it is only a question of what that legacy will be and the specifics of the shape it will take.

During the focus group I facilitated with the project team, it becomes apparent how the approach, the enabling ethos, is itself linked into the process of long-term sustainability and legacy planning:

> "We focused on that legacy, what's going to create something that is sustainable and therefore can continue to support activity locally, and [took] a facilitation role, rather than a doing delivery role" (SHP team member, Focus group, 2016-07-12).

An argument could therefore be made that planning for the project's legacy was written into its metaphorical DNA and seems to permeate almost everything that it does, from its original project delivery planning, the wishes of its founding partners, the planning of the Board, and through to its enabling ethos.

7.4.4.4. Threats to viability

The final code for the Viability category concerns actual or anticipated threats to the project's capacity to maintain its own feasibility relative to its medium of operation. Because the two activity streams of the project are food and energy, any threat to the project's viability – at least during the period of its funding – is likely to arise here.

With respect to the food activity stream, the two endeavours most vulnerable to risk are the click-and-collect SME, edibLE16, and the Food Forum, a steering group comprised of a small group of local food businesses. Of these, edibLE16 has involved the highest investment in both financial supports from the SHP and in terms of volunteer time, and the challenges that edibLE16 faces stem from attracting sufficient business support and from the perception by producers that edibLE16 is another customer, rather than an additional outlet vehicle to help them reach a (potentially) wider customer base.

The first of these challenges is summarised below by the edibLE16 representative at a Partnership Board meeting (2014-11-19), and is a theme that continues to the present:

> "What we're up against is showing how hard it is to get people to change their shopping habits. Everybody says that they want to buy local, they want to be more sustainable, but somehow we've just not got that message across with sufficient conviction to change the habits of our potential customers".

This is not due to a lack of trying on edibLE16's part. They have experimented with different approaches, including discounts, a physical presence in the Market Square, food tasting events, dinners for the public, participation in a range of public events, market research involving surveys and focus groups with customers and those who are on the mailing list but who had yet to place an order, and most recently, taking on free deliveries within a 20 mile radius of Market Harborough.

In a semi-structured interview with one of the representatives of edibLE16 (2016-05-06), the problem was identified as "somehow we haven't managed to establish any kind of leadership in the community – that's fundamentally what the problem is". This is the conclusion that a project team member raised in a facilitated Action Research meeting (2016-03-04) earlier that year about the degree of fit between the model and the interests of the

town: “If [edibLE16 are] not gathering more customers over this next year, then there is an argument that it’s not wanted locally”. The same idea had occurred to the edibLE16 representative during the semi-structured interview (2016-05-06):

> “Maybe we’re wrong. We say the community should be interested but maybe we’ll never convince the community that they are interested. Maybe the community doesn’t actually want [edibLE16]”.

The second threat to the viability to edibLE16 originates with the producers and the potential attrition on the volunteers if the business doesn’t pick up, as a representative from edibLE16 reported in a Partnership Board meeting (2014-11-19):

> “Some of the producers are not equipped to deal with high volume orders. A lack of volunteers is a risk going forward, especially if this project doesn’t gather some momentum because the initial enthusiasm will at some stage begin to wear off unless we’re able to generate more business”.

A further challenge to the viability of edibLE16 seems to be the general perception of the business from the perspective of the producers, as described by an edibLE16 representative during a semi-structured interview (2016-05-06) as a “dump and run”:

> “My single biggest disappointment with edibLE16 is that we have not been able to involve the producers other than them agreeing to give us a margin and them doing a dump and run”.

The representative elaborates that producers “get their order on Thursday, they bring it in on Friday and that’s the end of it.” The representative continues by acknowledging that

> “there are two really important stakeholders here: there’s the community which we think should be able to benefit from it; and there’s the producer who should be able to expand their

> business, perhaps achieve a critical mass that they haven't got at the moment, and thereby create a better business whether that's in terms of them continuing in business, or in employment or whatever."

The edibLE16 representative concludes that overall "we haven't been able to engage the community sufficiently, so we haven't got people flooding in the door, and we can't engage the producers more than just delivering to edibLE16".

Hence, edibLE16's continued viability appears to be at risk because it is squeezed between producers who apparently do not appreciate the potential added value that it might offer their business, and a consumer base who are not changing their shopping habits sufficiently to support local food and drink producers. Both of these pressures are seemingly beyond edibLE16's capacity to influence, and consequently it is difficult to anticipate how they might mitigate these risks to their viability.

The second area of risk to the food activity stream concerns the Food Forum, and this is particularly around engaging a sufficient quorum of interested participants to make decisions and to steer the direction of the local food strategy. The challenge of engaging local people is a perennial one, and concern about levels of participation were expressed by a SHP team member in a facilitated Action Research meeting (2014-07-23) as, at the time, the project's "biggest problem [is] that it's hard to get people involved in the food group" to the point that the team member was concerned that "getting people involved might be such a challenge that we'd be running to stand still in terms of effort from the team and progress against targets".

By shifting the emphasis towards a broader local food brand that ties in with quality assurance and local tourism, the project has been able to widen the appeal to include more stakeholders than the handful who comprised the original Food Forum, thereby reducing the risk to this activity stream while also

contributing to the potential success of establishing a local food and drink legacy.

The second main activity stream concerns energy. The lack of engagement by householders and the on-going lack of progress in engaging meaningful collaboration with the area's largest social housing provider have already been documented, so will not be rehearsed here. However, these challenges do pose a risk to the project's viability with respect to any response to vulnerability, such as fuel poverty, and it is not clear how this might be ameliorated. In recent months, the project has been able to make some progress in partnership with local installers to address energy efficiency needs among householders through the installation of insulation, and this may help ameliorate this risk. However, at the time of writing, this work stream is still underway and its full impact has yet to be realised.

The other components of the energy activity stream involve supporting business energy efficiencies, which has been discussed previously, and the community-owned energy embodied in the Harborough Energy SME. Following two setbacks, the first where the local district council appropriated the feasibility study the project funded to put solar PV panels on the roof of the Market Hall and used the study to install panels themselves, and the thwarted plan to install solar PV on the roof of the Robert Smythe academy which was reversed by the academy at the eleventh hour. Since then, there have been several other leads that have fallen through or not materialised for a variety of reasons.

However, since September, two installations have been successful and while these may be small in terms of output, these do evidence proof of concept as well as offer demonstration models for discussion with other potential investors. Consequently, there doesn't seem to be as much risk to the viability of Harborough Energy now as there once was.

Overall then, with respect to the project's viability as a whole, it seems reasonable to suggest that while it identifies the perceived need (vulnerability) and finds it an on-going challenge to respond meaningfully to this, the project has nevertheless been able to evolve a prognostic framing that fits the direction of interest and articulated gaps for local businesses. Furthermore, the project has maintained a strong emphasis on exploring its options for post-funding impacts and legacy, and generally has responded by taking steps to ameliorate threats to its viability. The main exception to this remains the continued fortunes and viability of edibLE16 without financial support from the project.

As a result, this code category seems to suggest that the project demonstrates its relevance and fit with its operational domain. In terms of organisms and their media, cognition is effective action, which means viability in conserving autonomy. As a potential learning system, the SHP also seems to be able to demonstrate a similar viability in terms of conserving its autonomy (identity) relative to its operational domain.

7.4.5. Design (Implementation of learning):

This is the third of the three core concepts[64] concerning second-order learning systems, and cuts to the crux of what a second-order system is. It is a system that designs itself through learning what it needs to do to conserve its autonomy. This category tracks examples of how it engages in learning and, more critically, the use of that learning in designing itself. This process is similar to the previous two, but sufficiently distinct to warrant its own category in order to track how the project learns, as per the following set of five codes, three of which (single, double, and triple loop – or 'deutero' learning) originate from Bateson's (1972, 1979) work on cybernetic systems.

64 The other two are 'Identity' and 'Reflexivity'.

7.4.5.1. Single loop learning

Single loop learning is characterised by the process of revisiting decisions that have been previously made, and reviewing these in the light of fresh information. It is a single loop, because there is only one iteration from the present to the past and does not critically revisit any other parameters aside from the appropriateness of a decision given new data. A single loop learning process need not result in any changes, although it might inform doing something differently in the future.

The process of Action Research yields multiple examples of single loop learning. In fact, the method is predicated on evaluating something that has been done (see Figure 3.2. above, for a diagrammatic representation of the typical Action Research cycle). There are hence multiple examples of the project engaging in single loop learning throughout both the facilitated and the non-facilitated Action Research meetings, and also evidence that the project team used these single loop iterations to inform future practices.

As one of several examples, the following illustrates how single loop learning occurs within the context of the project's processes of learning. It occurred during a Partnership Board meeting (2014-05-14), and concerns the RCC's liaison to the Board reporting on how the initial implementation of the Community Led Planning activity led to the process being revisited, with subsequent amendments to the model being adopted:

> "Having been disappointed in the approach of going out and holding an event we came back to the drawing board and we thought <well how else are we going to get an idea of what the issues are and try and come up with some activities that are going to tap into what is concerning local people?> So we put together a short survey which we distributed earlier on this year [January to March 2014] and that went to all houses across the Welland Ward and we received 153 responses which we were fairly pleased with considering the uptake from our previous efforts and events. We did hold another event as part of that

> process which again we saw fairly low turn out, so it seems that actually trying to promote these events cold couldn't get people to come along with such a generic topic area appears to be quite a difficult process".

There is evidence of learning about the engagement process through experimenting with a 'cold' engagement compared with undertaking a survey and obtaining a higher response rate.

The foregoing is but one of a substantial amount of similar reflective learning experiences demonstrated by the team. What happens less frequently are double loop learning processes, and these are consequently more interesting to find examples of.

7.4.5.2. Double loop learning:

Unlike single loop learning which concerns revisiting decisions in the light of new information, double loop learning is more significant. It involves the process of revisiting one's assumptions and beliefs about an event in a way that is more fundamental.

The spirit, if not the practice, of double loop learning is illustrated in the comments by the Chair of the Partnership Board during a Board meeting (2016-03-02) reflecting on the outcomes and monitoring framework:

> "there's the lessons learned bit, about the process and stuff, there's the lessons learned about the outcomes; the outputs measure what they measure, your activity; but critically, if we were to go back five years what would we put in those boxes now and how would we measure them?"

The latter point suggests the recursivity characteristic of double loop learning: if something were to be done again, knowing what is known now, what – if anything – would be done differently, and, crucially, what informs that difference?

A further example of double loop learning is taken from a facilitated Action Research meeting (2015-09-23) in which a project team member discusses the challenges of knowing how to focus their activity to yield a better return on investment. The team member suggests that

> "we need to focus in on what we think is going to be a fairly easy way of delivering on the targets. We've tried a sort of … we've done a bit of a scatter-gun thing … and it's not really worked … we've not really got any closer to delivering them in any meaningful way".

The assumption that is surfaced in this comment is that efforts undertaken so far, to chase targets, to deliver against outcomes, have not worked, so a different approach is necessary. The assumption is that a "scatter-gun" approach would work, when perhaps what would be better suited to the challenge would be some more tightly focused and strategic approaches.

It is worth considering, in the context of a developmental evaluation of a project, the degree of influence the initial assumptions exerted, when they began to be revisited, and how doing so influenced the strategic decisions of the project's activities. Such lines of inquiry may help to facilitate the project team to engage in double loop learning about the set of parameters they have been operating within, and how those constrain and shape the decisions they have made.

This is also critical from a second-order learning systems' perspective, because what is key to this is the understanding of how one observes (or learns), influences what is being observed (or learned). In Chapter 7 this was explored with reference to the concept of distinctions. By drawing different distinctions, a different universe is brought forth, with different options for action.

In the focus group I facilitated with the project team (2016-07-12), more of the team's assumptions about the project design and set up began to be raised, in a substantive and profound way:

> "when the targets were developed originally, take community energy, it was all very much on individual households. I saw targets as something that was driven by individuals in the community, and not actually so much businesses. But in reality, I think we would work far more with businesses, and actually it's businesses that have allowed us to be more engaged with individuals. It's the businesses that are actually going to be able to potentially make it sustainable – the projects – and also I think it's the businesses that provide a bigger clout because even our very small businesses, probably the same as a household, in size, and they get bigger from that, whereas trying to get engaged with the household, and not just the person in the household, it's a much more difficult thing to do, and I think, especially when TTMH and the RCC and the partnership group created [the targets] it was all very household-focused, and I think that we've skewed these to become more business focused".

The line of argument here is that, because the indicators and outcomes were focused on individual households, the project constrained its operational focus to that scale. It was only through the experience of poor engagement with households but more meaningful engagement with businesses that the project was able to revisit its founding assumptions, and the whole focus of the project shifted from the domestic and residential sector to work with the small and medium business sector. But to do so required that the project team, and the Partnership Board, re-examine their fundamental assumptions which had been constrained by the distinctions drawn in the original funding bid.

The final two examples of double loop learning also are drawn from the focus group I facilitated with the project team (2016-07-12), and these team reflections concern the challenge of collecting and defining data for monitoring and evaluation (M&E) purposes. In contrast to how the project began their monitoring practices, a team member acknowledged that "I'd say we do less

ticking boxes and more thinking about why we're doing it, which is probably the right way of doing it", suggesting that previously the team had considered the M&E function in ways not too dissimilar to those described during the EVALOC research (Hobson, Hamilton and Mayne, 2014; Hobson, Mayne and Hamilton, 2016): a necessary burden, that was in addition to what practitioners actually felt drawn to – practice and doing things. Here, the team member concerned acknowledges a shift in their assumptions about what M&E involves, that it is not about ticking boxes but that it is actually about thinking the process through and trying to learn from the intelligence being collected.

In the process of engaging more thoughtfully and critically with the M&E framework however, the project team also discovered that what had been designed to track progress was also a constraint. As another team member observes during the same focus group (2016-07-12),

> "of the original targets, I think there are 4 targets there that are completely meaningless – the bee one is one of them, the number of new community enterprises is the other, the £750,000 of local natural resources, and the 10% reduction in CO2 emissions. They're meaningless for us as a project".

This comes across, on one hand, as a damning indictment of a set of design parameters seemingly out of touch with the practical topography of the project's operational domain. On the other hand however, these comments emerge as indicative of a maturing project that has recognised the limits to what it can affect, and that is able to more meaningfully evaluate where it is likely to effectuate the most influence. In other words, these are statements concerning how the founding assumptions on what the project is supposed to be about have been critically evaluated, and how the outcomes of this evaluation process have been fed forward into the project's learning systems. That is, how the project has benefited from engaging in iterative or double loop learning processes.

7.4.5.3. Learning to learn:

Learning to learn (triple loop or 'deutero' learning) is what differentiates a second order learning system from a first order learning system. Double loop learning may be characterised as a bridge, or a springboard process that may, but does not necessarily, culminate in the emergence of a second-order learning system. It is difficult to imagine a second-order learning system that has not engaged in double loop learning, but it is not at all difficult to cite examples of double loop learning that has not culminated in the emergence of a second order learning system.

In fact, governmental policy is replete with illustrations of the latter, which is how much of governmental policy is developed *post hoc* as a set of correctives to invalid assumptions that had constrained, and blinded, previous policies and legislative frameworks. One need only think of legislation around climate change mitigation and adaptation for an example of this. Governmental policy concerning mitigation and adaptation pushes efficiencies to the level of individual sectors, and then further downstream to individual components of those sectors – transportation, businesses, manufacturing, residential householders and builders. This is legislation predicated on the basis of revisited assumptions concerning the origins of greenhouse gas emissions.

However, if the governmental policy makers were to evidence a shift from double loop learning to becoming second order learning systems, it may be necessary for them to recognise that the common denominator to both the mitigation and adaptation policies is the reliance of governments on an economic model that is predicated on growth, and a GDP that is enhanced through disaster and warfare (Dumanoski, 2009; Blühdorn, 2011).

A second-order learning system would not only recognise that these are key contributions to the lack of traction the two primary policy streams have gained to date; it would also recognise that the system requires a shift in how it

distinguishes what it counts as ‘progress’ and ‘value’. Einstein is credited with the observation that one cannot solve problems with the same way of thinking that created those problems in the first place. A second-order learning system embodies the practice of Einstein’s observation.

However, learning how to learn, that is becoming a second-order learning system, is a significant challenge, and there are no apparent shortcuts to doing so. It necessitates that a system first recognise how it learns, meaning that it identifies how its own systemic relations and properties condition what it is able to access, to make sense of, and secondly how it can change those relations and properties to access and make sense of different phenomena.

From Chapter 6, Heinz von Foerster’s pivotal contribution to science in which he introduced the concept of a cybernetics of cybernetics (that is, second-order cybernetics) was described as a system that is able to describe itself (von Foerster and Broecker, 2010), and hence a second-order learning system is one that can both describe how it learns and learns how to learn differently. The latter capacity emerges from drawing different distinctions. Hence, for this code what will be illustrative examples of learning to learn will be evidence that the project has engaged in different ways of understanding or distinguishing phenomena, different interpretations of events, and so on.

In a facilitated Action Research meeting in late 2014 (2014-12-17), about two years after the project officially commenced, the Project Manager reflected on any of the lessons learned to date from engaging in the project, namely that

> “[m]aybe one of the things that we learn from the project is don't worry about establishing SHP, worry about establishing edibLE16, a Food Map, an energy club, these things that people will recognise because they buy from them or use them or this [SHP itself] doesn't really matter”.

The distinction being drawn here is that it is not whether or not people recognise the name of the funded project as Sustainable Harborough, but rather that they engage with the project activity streams no matter how these may be understood or branded.

In itself, this is an interesting observation, but certainly not an uncontroversial one. For example, during the Mid-Term Review stakeholder meeting in December 2015 with Rose Regeneration, there was a protracted debate about branding the project, about subsuming the different activity streams under one branded and recognisable project umbrella, or whether the different activity streams were the more critical processes for people to become involved with. The debate did not reach a resolve, but it did highlight certain tensions between two different ways of tackling issues of engagement and branding. These differences, in turn, reflect alternate distinctions: one concerns engaging people with whatever might interest them regardless of who or what might be behind them; the second, about promoting a unifying brand name, within the auspices of which, people could participate in those branded activities.

But learning to learn extends beyond the politics of branding. As noted previously in section 7.4.3.1., under the code “Defining purpose – Teleology”, in a Partnership Board meeting (2015-02-11), the Project Manager observes that there are a number of qualitative changes that are occurring which do not fit within the constraints of the reporting framework, and therefore one of the ambitions of the project is to “adequately pass that onto Lottery, and then help them to change the way they get projects to report”. This is clearly an impetus to influence how the distinctions are drawn around reporting change, progress, and impacts. As the Chair of the Partnership Board (2016-03-02) observes:

> “[W]e’ve attempted to redress what those outcomes might look like, and if you translate the word outcome to ‘impact’, which is what’s the end game, what’s the benefit, there’s different bits of

> language about the end game – y'know, the difference between we had 1,000 different people turn up, nobody did anything and 8 people turned up and everyone did something. I know which I'd prefer in terms of the project, it's 8 people coming along and they all did something".

But, funders tend to overlook such qualitative dimensions of impact because the distinctions are not aligned with these changes to be able to recognise them as impacts. Again, this illustrates the emergence of the project as a second-order learning system because it is self-consciously and reflexively modifying its distinctions in order to learn how it learns about itself and its affects relative to its medium of operation.

7.4.5.4. Evidence-based strategy:

This penultimate code tracks how the project draws on its experience to implement strategic changes. There are already multiple examples of how the project has done this, including changing its monitoring and evaluation framework emphasis from the original design to something that better fit what the project understood to be its activities.

However, there are a range of more prosaic changes to the project's strategy predicated on prior experience and learning from that. For example, as a project team member reflects during a facilitated Action Research meeting (2015-03-27) on the experience of doing the "I love Market Harborough" festival for the second year running:

> "When I started to look at January to planning this year's festival, the first thing I did was go back to last year's Action Research after last year's festival and looked at what worked, what went wrong, what staff comments were, and we've changed things slightly because of what was reflected on last year"

A similar account is given by another staff member during an Action Research meeting (2015-06-03) leading up to their preparation for the second Green Open Homes event: “we'd made the improvements where we'd been asked to or realised we needed to. Specifically on information on average price of installations and just more basic information”.

Nevertheless, aside from these event-specific uses of evidence for planning, there is also evidence that the project draws on its experiences with and feedback from the groups it works with to improve the provision of engagement and enabling services. The following is an excerpt from a facilitated Action Research meeting (2016-03-04) during which a project team member comments on how the structure of the Business Energy Efficiency and Business Energy Club might actually be constraining engagement than encouraging it. The team member reflects that:

> “I just need to change the structure, and the businesses that do come along find it beneficial so the content is beneficial to the businesses, but also to make it more attractive for people to come to things, and from what Ideal Marketing said, there isn’t anything that fits that kind of informative … of how to run a business either through energy or waste or health and safety – there’s nothing out there that kind of fits that need for working groups in the town anyway. [Anticipates that the steering group will be receptive because] they’re generally receptive. They’ll probably have ideas or tweaks or whatever, but I haven’t had any massive objections to anything, but it’ll be interesting to see what they think about the merger between the energy club and the steering group meetings”.

This excerpt offers evidence on how, from the experience of different input streams, the team modify and amend the offer to businesses in order to better meet the project’s perception of their needs.

7.4.5.5. Design other

The final code is generic and is to some extent redundant insofar as the preceding codes are sufficient to capture what needs to be captured. However, the generic nature of this code affords it some flexibility to capture evidence that some more tightly defined codes are unable to.

One example of this is the broad reflection offered by a project team member during the course of a facilitated Action Research meeting (2016-01-07) about ways of working with other agencies in a multi-disciplinary and strategic manner to address common concerns concerning vulnerability and fuel poverty:

> “There are models that are already there that you could replicate. I think that it's all about the advice, and combining the advice that's out there and getting rid of that silo mentality and getting the agencies to work together and I think that perhaps we have a role in bringing that together. And the way I see the beauty of Sustainable Harborough is that it's a not-for-profit organisation that doesn't actually have anything to gain so we can bring it together and try and identify those people. It's a common problem, market towns in particular – particularly Northamptonshire/ Leicestershire, they don't have – apart from Leicester – they don't have the big towns that have the issues, but what they do have is what appears to be affluent societies and within them there are real pockets of deprivation, but unless you all work together and identify them, and it is about money, pockets of money that you can throw at it”

As noted previously in relation to the Food Map, because the SHP is a non-profit and non-partisan project, it is able to act as a strategic ambassador for causes and concerns that other agencies which compete for funding and territory are not. This gives SHP both an advantage, but also a significant ethical onus to do the ‘right’ thing. In other words, this advantage also proffers SHP a certain power, and with that an ethical responsibility as a quality of the relationships it enters into with the medium within which it realises itself.

7.4.6. Reciprocal interactions (Structural coupling):

The last of the six code categories recognises that all systems persist within a medium, which in turn, recognises that systems are distinctions drawn by observers and may therefore be construed as ways of thinking or talking rather than discrete entities in themselves (Anderson and Goolishian, 1988; Maturana and Varela, 1992; Midgley, 2000; Burns, 2010; Byrne and Callaghan, 2014).

In section 6.5.2., above, this relationship was described in terms of structural coupling through which system and medium reciprocally influence and shape each other in an ongoing dance. A developmental evaluation of a learning system would expect to see how that system changes, coded under the category of Transformation (7.4.2., above), but taking into account that changes to a system also incur changes in its medium, this category tracks how this reciprocal influence is discussed by the project.

7.4.6.1. Influence on medium:

This code will coincide with, but will not be exhausted by, measures of any impacts the project may effectuate on its domain of operation. Specifically, this code concerns how the project recognises and tracks how it may have shaped its domain of operation.

The impacts of a project such as the SHP are constrained by the community it is attempting to effect. As a member of the Partnership Board expressed in the course of a semi-structured interview, reflecting on what the project might be attempting to accomplish (2016-04-26):

> “I guess the real bit that's being tested and learned is not so much about the things – the local food or low carbon – it's more about how to bring the different networks together to actually deliver a bit more effectively. Because although there are, you

> know Transition Towns, Market Harborough is not Totnes[65], is it? It hasn't got that same kind of view of itself as a little centre of sustainability or whatever; so, I suppose some of what we're trying to do is take some interest at the ground level, and seeing if you can build it into that kind of thing where a community, a whole town starts to see itself as a bit more like Totnes. And to some extent looking at, so how did that happen in Totnes?"

According to this Board member, what is being tested is how the networks of extant groups and varied interests are being converged via the project in order to reflect a shared, or common, point of interest: a shared sense of community, a shared vision, a shared agenda. One that unites the disparate agendas of different businesses and organisations. That is, to construe the SHP as a unifying force that can gather and hold the different strands together, and thereby to engender a shared agenda, that unifies the focus of these varied organisations under a common umbrella. If this is the test, if this is what the medium of Market Harborough requires, then how does the SHP demonstrate an influence relative to such a need?

A project team member, in the course of a semi-structured interview (2016-04-27) proposes one potential account, given that when Market Harborough was asked, pursuant to the October 2013 Food and Drink and the January 2014 Energy and Water fora, it was predominantly businesses that responded:

> "Start off, right at the beginning, with that kind of thinking in mind, and you're more likely to make it, and maybe because it sets your mind in that business frame rather than in the charitable frame, and it's that sort of enterprising thing of 'let's try that, and if it doesn't work, we'll go over there and do that instead, but we'll take some of that stuff, that learning and apply it here, and we won't be scared off, we'll just get wiser'".

To put this differently, when Market Harborough was approached by the project, and asked about how they would like the project to deliver sustainability, about

65 The site of the first (official) Transition Town (Hopkins, 2008).

what the community would like the project to prioritise, about what the town wanted the project to spend the £1 million grant fund on, it was predominantly the businesses that attended and replied, while the residents tended neither to attend public opportunities to have their voices heard, or to input into how they would like the fund to be spent in their names.

Consequently, in evaluating the relative impacts of the project on the medium of Market Harborough, it is legitimate to ask “which Market Harborough”? Is the medium within which the project is embedded that of the Market Harborough residents, those who do not attend meetings, who do not respond to consultation exercises, who do not support and engage in buying local food? Or, is the actual medium the business communities of Market Harborough, those who do attend public fora, who do participate in meetings and who do respond to consultation events?

If the residents of Market Harborough do not engage, participate, or come forward, then realistically, at which point does the project evaluate the situation, recognise that it only has a limited time and resource budget and decide to work with those sectors of the Market Harborough community that, in turn, express an interest in and engage with the project? From the project’s perspective, the project will not “be scared off”, but will go where the energy and the interest is, since they have work to do.

If it is to be recognised that the residential community of Market Harborough are under no obligation to engage and participate, and that the business community is similarly under no obligation, then if one sector *does* engage, then there can be no blame attributed to the project for electing to work constructively with the sector that responds. As a result, while the residential sector may have been originally identified as the benefactors and potential stakeholders in the project, it appears that it is actually the small and medium sized business community which has decided to engage and has actually

participated in the activities of the project. Consequently, it is this community, and not the residential community, which is to be considered as the medium within which the project realises itself, and for which it may have generated change that is qualitatively different. If there are impacts, and if the project is to be evaluated according to these, then it seems appropriate to evaluate the project for impacts it has triggered within the context of the communities with which it is actually working. In this case, the impacts of the project are to be evaluated relative to the business community.

Many of these influences on the Market Harborough business community have already been discussed, and do not require reviewing again. The Food Map, the development of a local food brand, the invitation to participate in the town's Arts Fresco event two years in a row, becoming a member of the town's Chamber of Commerce, all of these suggest an influence of the project on the town. When evaluated from the local business perspective, this influence has yet to be fully accounted for, and may not be accurately represented through reference to the more broad focus of the original monitoring framework, which assumed an equivalence between the residential and the business communities.

7.4.6.2. Influence on SHP

The foregoing is not to diminish the relevance of the Market Harborough residential community. It is only intended to situate that, within the broader context of engagement and representation, following various attempts to engage the residential community, overall it is evident that few elect to participate in a meaningful way with the project's offer. This in itself constitutes an effect on the project, insofar as it constraints the quality and nature of what the project might be able to offer people who live in Market Harborough.

The medium within which a system realises itself exerts multiple constraints on how that system might be realised, and these constitute what

Bateson (1972) referred to in terms of one pole of a ‘double description’ or a negative explanation. That is, what stops something from being realised fully?

This question recognises that a medium is not a passive plinth upon which a system expresses itself. Rather a system will constrain some potentialities while enabling others, and it is this interaction, this relationship of constraints and affordances between a system and its medium which lies at the heart of cybernetics, and later, systems thinking. As a result, this code tracks those constraining influences that contribute, in one way or another, to the shape the developmental trajectory of the SHP took as it unfolded. It is not the same as tracking potential threats to the project’s viability, but rather how the medium pushes back against the focal system, leaving its imprint on the becoming of the project.

One such constraint has already been identified in the previous section. That the residential communities of Market Harborough seemed to be largely disinterested in, or at least, disengaged with, the project, left the project open to becoming a vehicle to endorse and support the interests of local businesses. It is, of course, entirely feasible that this, in itself, will have some knock-on benefit for local residents, many of whom may work in and profit from local enterprises.

While (some) residents may indeed benefit from the engagement of the project with local businesses, the project nevertheless needed to maintain an awareness and sensitivity to the common characteristic of small towns, which concerns the internal politics of ‘cliques’ and dense network structures. As a project team member observed during a facilitated Action Research meeting (2015-03-27):

> “I do think we need to be careful of that small town mentality and being a bit cliquey – not everyone wants to know one’s business, some people do and there’s not always an escape from that. So we must be wary that we don’t just get cliques of

> people and are still actively looking to encourage a really diverse range in the projects".

Recognising this risk, the response from the project is pragmatically democratic: "We just invite everybody, we try to be fair" (SHP team member, Action Research meeting, 2015-03-27).

However, the operational context within which the project operates is often more complex and unpredictable than can be resolved through a simple transparent democratic invitation to events. This is illustrated with a protracted challenge to progress a local energy installation in nearby Kilworth, for example. During a facilitated Action Research meeting (2014-12-17), a project team member discussed a "struggle" that had been underway since August 2014

> "to meet (a) with the site owner and also (b) meet with the neighbours [...], and we have struggled. Not sure why. […] They could potentially block planning permission and they are also potential customers for heat and electricity".

In exploring various options available to them, the team member notes that

> "[w]e've not gone by on an informal basis because we were warned off taking that approach. We were told that we had to go in through someone they know, which is why we've been trying to go through with [the site owner]. They're not a particularly friendly outfit by all accounts" (ibid.).

As a result of this, even after two years of engagement with the site owners, the installation of an energy scheme has yet to materialise. The concept of the scheme itself has undergone several permutations, having started out as a planned anaerobic digester using food wastes and evolving into its latest incarnation of a tallow-driven generator. At the time of writing, this was still in a holding pattern due to the pending sale of shares by one of the site's shareholders, but as time passes the opportunities begin to diminish. The ROCs (renewable obligation certificates) are set to expire by the end of the first quarter

in 2017, reservations to connect with the local grid ring are due to expire and there is already fierce competition for available connections, and feed-in tariff (FIT) rates may fall, which reduces the return on investments. Furthermore, the supplier of tallow is also seeking to make arrangements with other users, which means that there may be a limited opportunity to secure a reliable place in the fuel supply chain.

The impact of this on SHP is to constrain its capacity to provide a fully functional local energy scheme that will supply the site owners with energy and enable a provision of low cost energy to the site's neighbours which will be the return to investors. While failure of this scheme to come together is not mission critical to the project, it is nevertheless a significant dampener on the scale of the project's community energy plans.

It is apparent that of the two activity streams, food and energy, it is the latter which has proven to be the most difficult to develop. This is likely due to a couple of reasons. First, despite various legislation concerning food safety and handling hygiene, the legislative concerns around the food activity stream are upstream – the project works with food producers and retailers each of which look after those considerations as part of their own business practices.

With energy, especially community-owned energy schemes, however, the project encounters the full extent of national and local policy and legislation infrastructure more directly. Depending on the nature of the installation being considered, a community-owned generation scheme will involve planning permission for the proposed site, or acquiring roof leases for solar PV panel installations. In all cases, there will also be restrictions governing establishing grid connections due to grid capacity, and if the model is to attract investors, then there will also be the need to secure ROCs and to predict FIT rates for a given future period (bearing in mind the fluctuations in FIT rates over the last two to three years), and the scrutiny of any such offers according to financial

regulations, all of which needs to come together synchronously in order to make the business case for investment.

In light of these constraints, the policy and legislative infrastructure is one of a complex of environments with which a project such as SHP interacts. Because this environment reflects the interface between the project and the next larger scale system – the local and national policy system – its capacity to 'push back' and constrain the project's development is significant. The scale of the policy and legislative environment means that it is often slow moving and highly resilient to change. As a result, projects are likely to experience retarded progress in realising activity streams, and this has certainly been the experience of the project to date with respect to implementing its community-owned energy generation schemes, except on a small-scale, such as at the school in Corby and at a local health club, both of which involved roof top solar PV panel installations. Taking on more ambitious projects, such as tallow-driven generators, run foul of both business politics and the policy environments, both of which exert an influence on the SHP.

7.4.6.3. Ethics and trust:

This final code set reflects how the project enacts itself in relation with the communities of Market Harborough. As a project in which £1 million was invested, in which multiple stakeholders invest their time and energy, and which acts, to some degree, as an ambassador for doing things differently in the town with respect to the local food economy and the local politics of energy efficiency and generation, the project carries a reasonable degree of gravitas. For people to want to become involved, the project must be seen to be trustworthy, to conduct itself in an ethical and transparent manner. This was recognised early on in the project's development, as noted by the Project Manager during a facilitated Action Research meeting (2014-04-02):

> “as people trust you more and they come into play a part or a role in the structure of the organisation the ethics become part of that trust […] everybody knows what they stand for, everybody knows what the process is, everybody knows that you will do your best within certain constraints”.

For the project, their ethics is conveyed through how they act and speak. The Project Manager has the most to say about this theme, describing it through reference to ‘tone of voice’ (see 7.4.1.1., above, for further elaboration on this metaphor): engagement is “all about tone of voice, it's all about making sure people think you're going to do what you say you're going to do, and follow through on the tone of voice that you use” (Action Research meeting, 2014-07-23). The Project Manager reiterated this at the Mid-Term Review staff team meeting with Rose Regeneration (2015-12-17), claiming that

> “it’s being seen and trusted, but it’s also that tone of voice. We had that discussion really early on about how do we go about talking to people – that really key thing of not nagging people, not getting on people’s case to do things, and therefore being more accessible when people want to find you, they will do because they know you’re not going to preach to them”.

It is evident that however the project conveys its ethics, investors in the local community-owned energy scheme offer were willing to take the risk and invest £185,000 in the proposed solar PV installation at Robert Smythe school. As a stakeholder comments at the Mid-Term Review stakeholder meeting with Rose Regeneration (2015-12-17):

> “I suspect trust is behind a lot of the success. I mean, you're talking about Harborough Energy, you're talking about people raising nearly £200,000, and people won't do that unless they trust the proposition, and I think having something like SHP behind it creates that trust. I think that's a very powerful mechanism in the market.”

Yet, despite this significant endorsement by would-be investors who, even after the collapse of the Robert Smythe proposal still left ~£100,000 invested with Harborough Energy, the SME set up by SHP, the project still seems to have some doubts about just how credible it actually is in the eyes of local people. In considering whether to introduce a local currency, the Harborough Pound, the Project Manager reflects that:

> "The [local] currency is something we've discussed, so the Harborough Pound is something that was proposed in the original project, and right from the outset, the discussion was framed around if we feel we get to the point where we feel we get enough credibility to propose it and it might be accepted, then we might start having those discussions. I don't think that we're anywhere near that yet, and we're over halfway through the project, and I think that's a perfectly reasonable reason for not taking something forward" (Action Research meeting, 2016-03-04).

It is difficult to evaluate if this reluctance to introduce a local currency stems from doubts about the project's credibility, or from other misgivings about the idea. However, it is not going to be something that will be taken forward, as per the decision in a recent Partnership Board meeting (2016-11-30).

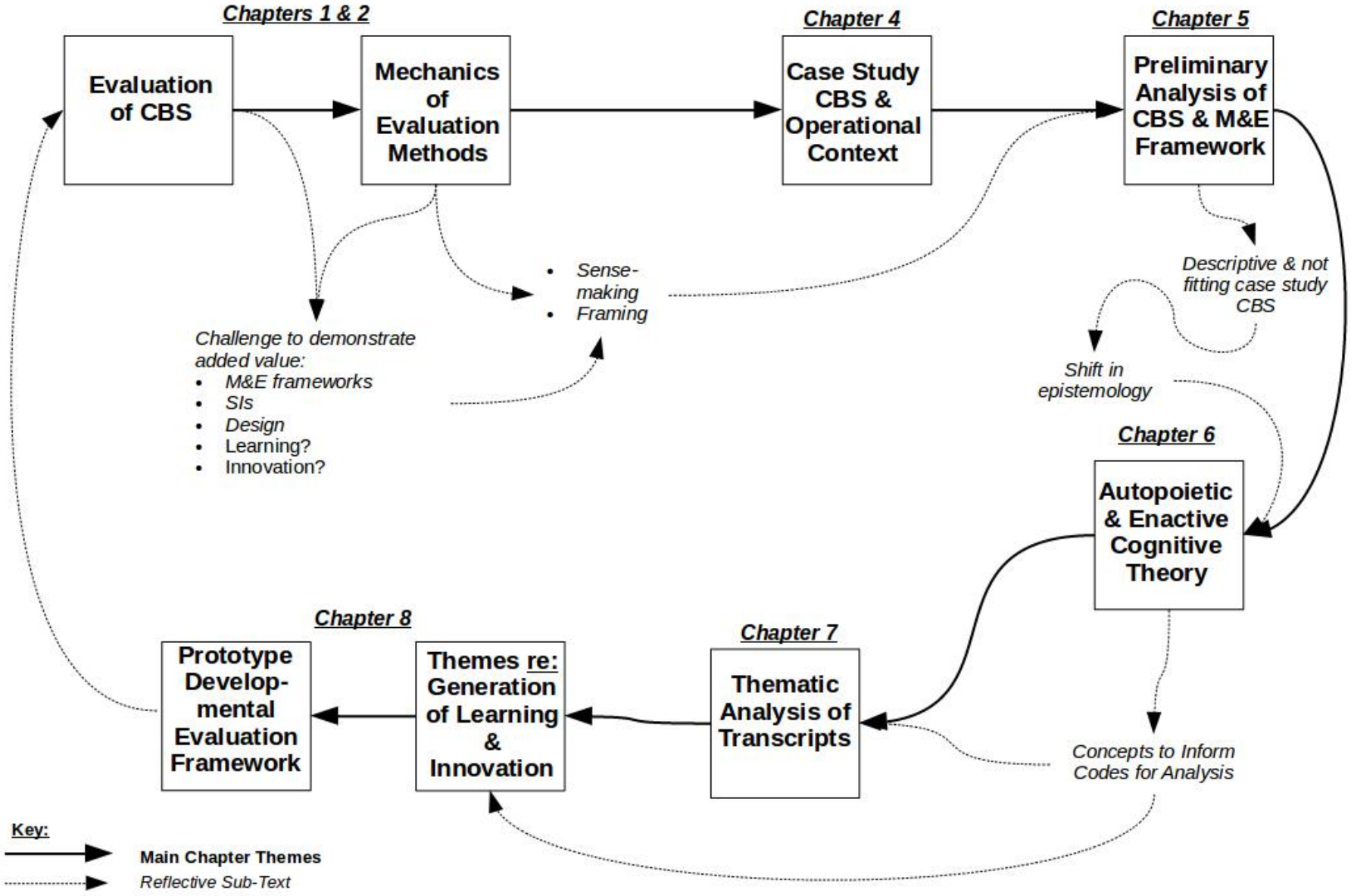
On balance however, the project does express an ethical sensitivity and does tend to regard itself as both ethical and trustworthy, and there is no evidence to the contrary from other sources, whether this is from stakeholder interviews or the public survey I conducted during April and May 2016. With a few exceptions that criticise specific decisions taken by the project, such as a lack of visible shop presence in the High Street or an expectation that the project engage more with people, there were no misgivings expressed about the trustworthiness or ethical conduct of the project in any of the surveys, focus groups, or interviews I have been party to.

7.5. Chapter Synopsis:

The foregoing pages are the first phase of the Thematic Analysis of the transcribed audio recordings of a range of meetings to which I was party, either as an observer, or as facilitator. The code categories and codes used in this analysis have been informed from an attempt to apply the theoretical framework of autopoietic and enactive cognitive theory as introduced in Chapter 6. As a result of this second set of literature, the thematic analysis is augmented through the inclusion of concepts that provide a coherent accounting for complexity. Such concepts, and the theory of mind and cognition these relate to, may support the application of a developmental approach to evaluation that tracks and explores how project teams learn to do the work they are expected to do under conditions of uncertainty and complexity. Such an approach to evaluation, now bolstered by this set of concepts obtains the theoretical rigour to stand alongside, and to inform, more traditional approaches to evaluation practice.

In this chapter, six code categories were constructed based on these insights, and when applied to the transcriptions, led to a number of key themes being highlighted. Example citations from the transcripts are evidence of how such learning and reflexive project design were manifest in practice, and lend support to the generation of themes, which is the final stage in a thematic analysis.

The following chapter explores the ramifications of these themes with respect to generating an understanding of the case study CBS as a second-order learning system, characterised by the project team acquiring the capacity to learn how to learn within the operational domain of the project's objective to elicit sustainability outcomes in Market Harborough.


Chapters 1 & 2
Evaluation of CBS
Mechanics of Evaluation Methods
Chapter 4
Case Study CBS & Operational Context
Chapter 5
Preliminary Analysis of CBS & M&E Framework
Descriptive & not fitting case study CBS
Shift in epistemology
Sense-making
Framing
Challenge to demonstrate added value:
M&E frameworks
SIs
Design
Learning?
Innovation?
Chapter 6
Autopoietic & Enactive Cognitive Theory
Chapter 8
Prototype Develop-mental Evaluation Framework
Themes re: Generation of Learning & Innovation
Chapter 7
Thematic Analysis of Transcripts
Concepts to Inform Codes for Analysis
Key:
Main Chapter Themes
Reflective Sub-Text

8. COMMUNITY-BASED SUSTAINABILITY INITIATIVES AS LEARNING SYSTEMS:

8.1. Introduction:

This is the second substantive phase of a Thematic Analysis (Braun and Clarke, 2006; Bryman, 2012), and involves exploring the relationships that emerge from a review of the codes with respect to the research aim and questions.

The argument offered in the present research is that, in order for CBS (community-based sustainability) initiatives to acquire the necessary requisite variety[66] to effectively respond in a meaningful way to the complex adaptive systems into which such initiatives are deployed, initiatives must evolve to become reflexive (second-order) learning systems.

In the previous chapter, six candidate properties were proposed as parameters for the developmental evaluation of the case study CBS initiative, the Sustainable Harborough Project (SHP), as a second-order learning system.

(a) Identity – pertaining to autonomy
(b) Transformation – pertaining to renewal
(c) Reflexivity – pertaining to teleology
(d) Viability – pertaining to relevance or fit
(e) Design – pertaining to the implementation of learning
(f) Reciprocal Interactions – pertaining to structural coupling

66 This is Ross Ashby's (1957) theorem which, referring to Shannon's work on signal-to-noise ratios, states that "the amount of noise that can be removed by a correction channel is limited to the amount of information that can be carried by that channel" (p. 211). By substituting 'complexity' (or 'variety' *sensu* Ashby) for 'noise', the law of Requisite Variety means that a certain level of complexity in a medium can only be 'controlled' by a requisite amount of complexity in the system.

The transcribed audio recordings of meetings, along with the SHP team's own reflections from non-facilitated Action Learning meetings were then coded using RQDA (Huang, 2014) (see Appendix J for a screen shot of RQDA in use), and the coding dictionary given in Appendix I.

The line of argument taken here has proposed that in the course of the SHP establishing its objectives (be these the formally stated outcomes and suite of indicators or attaining the vision statement), developing its *modus operandi* and ethos, acquiring an understanding of the context within which it is located, and determining how it can account for any impacts attributed to its activities, the SHP has undergone a qualitative shift from a first order to a second order learning system.

A shift in the order of a learning system is a state change in the system. The shift is in the parameters it encompasses – an increase in its degree of complexity. It is therefore worth exploring the impact of this shift as a process of learning, and thereby reach the point that the two research questions can be directly addressed in order to respond to the over-arching research aim that has informed this present work.

8.2. CBS initiatives as first order learning systems:

Christine Blackmore, building on the work of Geoffrey Vickers on appreciative systems, defines a learning system as comprising "interconnected subsystems, made up of elements and processes, that combine for the purpose of learning. The placement of a boundary around this system depends on both perspective and detailed purpose" (Blackmore, 2005: 13). When the SHP was launched, the subsystems were comprised of members of the staff team and Partnership Board, and very few processes were in place.

It did, however, seem to evidence a boundary by its clear delineation from its origins in the local Transition Town chapter, as detailed in section 4.2.1., above. From the perspective of the SHP staff team and Partnership Board, this boundary concerned issues of accountability on behalf of the senior partner, the RCC, and *not* to exclude a partner from the process. This clearly illustrates how different perspectives generate differences in distinguishing systems. From the perspective of those 'inside' the SHP system, this was business-as-usual in terms of exercising good governance; for the TTMH (Transition Town Market Harborough) 'outside' the system, this was an exclusion that led to a significant identity crisis and the withering away of the group.

The purpose of the system is defined by the expectation of BIG Lottery to deliver against the six outcomes that had been agreed to by the senior partner, the RCC, and the early discussions among the staff team were primarily concerned with how to define and achieve those indicators. These conversations were organised around how much flexibility there was in the brief (Action Research meeting, 2014-04-02) and about the practical specifics, if not mechanics, of project management, such as cost-benefit analyses and time allocation (Action Research meeting, 2014-07-23).

The SHP as a first order system was oriented around attempting to deliver specific activities that would lead to impacts that were already defined by the indicator set. This was a particular concern, and the facilitation of edibLE16 as a project activity, for example, was to "[h]elp stimulate the local economy and local marketing of different produce, which already exists in Market Harborough" (Partnership Board meeting, 2014-05-14), which would contribute to the realisation of, at least, Outcome 3.

Describing the SHP as a first order learning system is to acknowledge that the components and processes that comprise the SHP system were, at that

time, cohered almost exclusively around the core purpose of delivering against the agreed indicators. It is also to acknowledge that projects, regardless of the domain to which they are intended for deployment – international developmental aid (Ramalingam, 2013), education (Ison *et al.*, 2007), or sustainability (Patton, 2011), are commonly designed by actors who are themselves not involved in the actual realisation of the project itself. The extent of the research into the operational context of such projects is highly variable, and in the case of SHP is open to some debate about, first, how representative of the town the originators of the initial expression of interest were and, secondly, even after the £10,000 bid development grant had been awarded, how much public consultation took place.

In the absence of meaningful consultation among the residents and business communities of Market Harborough, it is difficult to ascertain with any degree of reassurance how the six outcomes and the suite of fourteen indicators supporting those outcomes reflect the aspirations and interests of Market Harborough, nor how feasible their attainment was likely to be. Moreover, as noted in the previous chapter, there is some doubt about just how representative of Market Harborough the vision statements generated by the originating Transition Town chapter were.

However, it is apparent that the design of SHP in such a first order fashion is by no means unique. It does lend support for the claim that the apparent failing of meaningful impacts achieved by such projects may be due less to the project's monitoring and evaluative practices, and perhaps more to the deployment of a linear (here, termed a first order system) project design to a complex context (Burns and Worsley, 2015). The logic seems to hold, supporting Ashby's Law[67]: if the project design is inappropriate to the context that it is intended to fit, then even the most stringent and scientifically rigorous

67 See footnote 66, above, for details.

M&E framework will not be able to demonstrate that the project has resulted in any meaningful change.

In summary, first order learning systems are characterised by “blueprints, goal-seeking behaviour and an assumption that control is possible” (Ison and Blackmore, 2014: 5), and the project is deployed within a context under the assumption that the project is an immutable or catalytic praxis that will trigger a specified range of pre-determined responses. When the SHP was initiated, it bore the characteristics of a first order learning system: a solution, pre-determined and possibly drawn from elsewhere, pre-designed, for a problem that was under-researched but assumed to fit a particular generic framework concerning elevated emissions of CO_2 and the necessity to increase the use of local natural resources. In the terminology of Burns and Worsley (2015), this was a linear design profile intended to address the complexities of a wicked problem (Rittel and Webber, 1973) construed in the specificity of a problem, defined here as ‘community sustainability’.

The deployment of a first-order design is not, in itself, a wrong approach to adopt. In fact, many first order systems work quite well, and civil engineers rely on first order systems all the time to great effect and generally high standards of safety. Rather, the question is better phrased regarding the *viability* (von Glaserfeld, 1980), or fit, of such an approach, given the complexity of the issues at stake. Second-order systems begin ‘life’ as first-order systems, and that it’s through processes of becoming ‘self’ aware that a system shifts into a second-order (system of a system) entity.

8.3. CBS initiatives as second order learning systems:

The transition from a first order to a second order system involves what Bateson (1972) termed framing – a meta-communication – in this case, the

system becomes aware of its own systemic qualities, a self-awareness or reflexivity. These are characterised as second order systems because they incorporate the awareness of itself as a system in its process, in just the same way that second order cybernetics incorporates (embodies or takes into its corpus) the observer and the act of observation that brings forth whatever is being observed.

There are a few factors that may have contributed to the SHP not remaining in the constraining frames of a first order learning system. The impetus of any one of these is difficult to determine, let alone quantify. However, probable candidates are as follows:

- Learning about what it means to be a learning project;
- Leveraging an enabling ethos in preference to a pure delivery-based model;
- Investing in seeding changes that were intended to survive the funded life of the project (legacy focus);
- Adapting to changing contexts to maintain its viability;
- Defining its boundaries and what was beyond its scope; and
- Discovering and transcending the project's own limitations

These are discussed in turn, with reference to the code categories detailed in Chapter 7.

8.3.1. Learning about being a learning project:

The CLS explicitly badged the twelve funded projects as learning projects, which inculcated a degree of latitude among the projects to experiment with different approaches to elicit community sustainability and resilience to fuel poverty, vulnerability, and adaptation to climate change.

It was this researcher's experience that the case study CBS did try to leverage the flexibility of this experimental ethos. This included adopting a

laissez-faire attitude towards being a learning project in which mistakes and errors in judgement were glossed over, for example:

> "I suppose with the smaller community projects as well, because we are a learning project, although there might be risks, the whole point was to 'crack on' and do it … because it is that learning" (SHP staff team member, Action Research meeting, 2014-07-23).

On the other hand, the project also engaged in more structured experimentation to test and learn, experimenting with ways of cultivating social capital via the quick win of the local food and drink map, for example. In addition, the project evidenced a willingness to transcend the perceived limitations of the Lottery indicator framework by using measures predicated on a Keynesian economics, like the Local Multiplier[68] effect to the third tier of impact (LM3), or qualitative narrative evidence from the Most Significant Change (MSC) technique (Davies and Dart, 2005) which captures impacts observed from the perspective of the intended beneficiaries.

But being referred to as a learning project is, in itself, insufficient to trigger a shift from a first order to a second order system. What seemed to precipitate the shift was the project's willingness to engage critically and reflectively in what it meant to be a learning project, and in the process of this critical engagement, the project began to engage in learning about learning … what Bateson (1972, 1979) termed deutero-learning.

This process of learning about learning was clearly, and succinctly, stated at a Partnership Board meeting early in 2015, as per the following quote:

> "I think the reality check here is that this is a new area of programme and the Lottery haven't been clear about what that

68 See http://www.pluggingtheleaks.org/downloads/plm/plm_the_money_trail.pdf Accessed July 28th, 2015.

> means, so it's up to us as part of the learning" (SHP Partnership Board member, Partnership Board meeting, 2015-02-11).

The absence of definitional clarity given by the funding agency about key terminology integral to monitoring and reporting on performance relative to the indicator set seemed to become a catalyst for the project to participate in defining the scope of its own learning. That is, the project actively endeavoured to learn about learning and to help inform the funding agency about what is being learned and how. This is one of the contributions to the project becoming a second order system, to becoming reflexively aware of itself as a learning system.

The project needed to be clear about what it did *not* know. This endorses the concerns that the project expressed about the absent monitoring indicator baselines and the inaccessibility of some data. However, it also means that the project had to learn about its own gaps in capacity, what it was and was *not* capable of doing. Some of this might have been addressed at staff recruitment, some of it was addressed through feasibility studies, some of it may have been addressed by someone in my own role to be a friendly outsider, some of it is due to good steering from the Board. In any event, the gaps in knowing both about the town, but in the Project's own knowledge base had to be acknowledged and defined before they could be addressed.

The second meaning of this parameter is that the Project deliberately experimented with different approaches and considered the results in terms of what seemed to work with respect to engagement, managing project activities, knowing when an activity wasn't working, adapting to changes outside of its control and becoming better prepared for the future, and so on. The Action Research function has a very useful role to play in helping projects such as this to acquire that capacity for learning by planning, doing and evaluating. In addition, due to the funding of my PhD, I was able to contribute to the project's capacity for learning through facilitating the Action Research meetings, advising

and supporting on the monitoring and evaluation work, and through testing the approach formalised in Table 8.1. below, which is a prototype developmental evaluation framework informed by second-order cybernetic concepts and enactive cognitive science.

8.3.2. An enabling ethos:

Another contribution to what is being described here as a shift from a first to a second order learning system is that the project adopted, at an early stage, an 'enabling' approach. For the SHP, enabling has a specific meaning that distinguishes it from delivery, even though in practice, this difference is blurred. In email correspondence with this researcher, the Project Manager clarified how he understood the concept of enabling as the ethos of the project:

> "The key thing is that the ethos set the intention – that sustainability had to [be] integral and that includes the sustainability of the projects, so not setting things up before we have a good idea as to how they might be sustained in the future. The biggest problem with this as a project delivery mechanism is that it relies on having the luxury to be able to play the long game, and part of that is being able to park some of your early ambitions like lottery targets, making a big early impact" (Project Manager email, Subject Line "RE: Public/ community consultation events", 2016-06-06, sent 12h20).

In this email, the Project Manager identifies two key aspects of the enabling ethos, both of which, it is suggested, helped contribute to the shift in the project from a first to second order learning system. The first of these is that the SHP set out to enable local stakeholders to engage in and do 'sustainability' for themselves with the SHP as a supporting function.

This support would, in essence, be a resource to help an initiative with the administrative resource and expertise, described as doing the "grunt work" or performing a "secretariat function" (Stakeholder, Mid-Term Review Stakeholder meeting, 2015-12-17). This so-called 'secretariat function', while described here by the stakeholder concerned in relation to the work undertaken

by the SHP staff team in support of the Harborough Energy SME, also provides a testament to the project's ethos to *enable* rather than to directly deliver.

The second key aspect of the enabling ethos is to use time properly to see what is already happening on the ground, where the gaps are, what can be built up or built upon, and to strategically plan how to go about doing that using the evidence collected.

The ethos of enabling is defined by the intention to set processes up, to trigger responses from various sectors of the engaged community to advance their own agendas. Part of this arises from what the Project manager refers to as the "tone of voice". As discussed under 8.4.1.1. above, this phrase means that stakeholder engagement is not about badgering or judging people, telling them to do or to stop doing things, nor even referring to the term 'sustainability' much in conversations.

The enabling ethos requires adopting a combination of patience and vigilance. The attitude of patience is the recognition that events take their own time to unfold, while the attitude of vigilance is remaining alert to signs that events are, indeed, beginning to unfold and to track that direction of change. Both these attitudes require a project team to be able to take a step back, and it is possibly this stepping back that facilitates a breach with the immersion in everyday life, and introduces a reflective space. This may be the site of origin for the emergence of second-order learning because it necessitates that the observer engage in drawing different distinctions, which opens up novel possibilities as a result.

8.3.3. Legacy focus:

A third contributing factor to the emergence of the SHP as a second order learning system is that the project explicitly sought to achieve the foundations by which it was able to account for its continuation beyond the

funding window of December 2017. Referred to as the SHP's 'legacy', the notion that the project should prioritise how it would survive the funding window was established early on, initially in the Project Delivery Plan (RCC, 2012), and reiterated during the first few Partnership Board meetings, and remains a perennial agenda item for discussion.

However, this focus on the post-funding impacts also permeates the design of the SHP's activities, as described in the following email from the Project Manager:

> "the distinction [between enabling and delivery] is what the end intention is. I have been involved in many funded projects including writing bids, and there is usually an 'exit' question which is normally written as an afterthought" (Project Manager email, Subject Line "RE: Public/ community consultation events", 2016-06-06, sent 12h20).

That the project seeks an existence beyond the funding window, even in the absence of any definitive funding opportunity, implies a system that is already self-aware. It is self-aware in at least two ways.

First, the project team and Board members, and to some extent the stakeholders, are aware of the project's finitude, and that the clock continues to countdown to when the funding ceases.

The second way in which this recognition of limits suggests a self awareness is that the team and Board members are able to envisage a post-funding entity, beyond the parameters set out for it by the CLS project fund, and existing in the realm of possibility. This possible post-funding project opens a creative, imaginative space through which ideas can flow. Those ideas that seem attractive and feasible can be identified and selected, and through a process of 'back-casting', common to Transition Town work, can be retrofitted to the steps necessary to realise it. But again, it is the creation of a space, even a

space for the imagination, that may be the origin point for the emergence of new distinctions being drawn and again the generation of new universes of reference becoming available.

This imaginative space is also a creative one through which, the SHP as a sustainability initiative, might evaluate how it can leverage its resources recursively to ensure that the project activities it initiates through its enabling are themselves seeded for sustainability. In so doing, the project begins to design its process of designing, thereby assuming a meta or second order perspective.

8.3.4. Adapting to changing contexts to maintain its viability:

A fourth contributory factor that might be involved in facilitating a project shift from a first to a second order learning system is in the degree of adaptability it is able to call upon to maintain its viability relative to changes in its domain of operation.

For the SHP case study, for example, this was discussed with reference to the initial assumptions regarding the stakeholders with whom the project would be working. It had initially been assumed, as given in the Project Delivery Plan (RCC, 2012), that the main stakeholders would be householders. However, this was actually not the case, a significant change that only became apparent to the project team following a low turn out to the two primary public events on food and energy by residents relative to the comparatively larger numbers of businesses represented at these two events. This was the general trend throughout much of the early phase networking and engagement activities undertaken by the project.

Had the project not been able to be flexible in its approach and adapt to these changes, it is feasible that the project would have been left behind and

missed the opportunities that were presenting themselves with the business interests. Perhaps the enabling ethos facilitates a flexibility, and this was discussed above in terms of the attitudes of patience and vigilance. It is not difficult to imagine however that had the project invested itself in a delivery model, when the stakeholder group shifted from who it was anticipated to be, the project would not have been able to complete on any of its delivery strategies, and would therefore have become, or at least faced a significant risk of becoming, irrelevant vis-à-vis its operational context.

The capacity to adapt to change demonstrates a capacity for learning. In particular, it demonstrates the capacity to be aware of change in one's context and to iteratively and reflexively update one's own activities in a form of pattern matching. By continuously adapting, the project is able to maintain its viability and its relevance to the stakeholders of Market Harborough who do wish to be engaged in what the project can offer.

8.3.5. Defining its boundaries and what was beyond its scope:

However, being flexible and engaged to continual adaptation does not mean that a project promiscuously chases any and all opportunities in an effort to maintain relevance. From autopoietic and enactive cognitive theory, viability is the conservation of autonomy, or identity, relative to the domain within which the focal system is realised. As a result, there is a delicate balance between being open to novel opportunities and maintaining the project's identity as a project that does sustainability, however that is defined.

The project maintains its identity by adaptation on one hand, but also through knowing and respecting its limits or boundaries – what it is not – on the other. In section 7.4.1.4 above, these decisions were coded as "Beyond scope", and reflected evidence of what the project recognised was beyond its capacity, or was at the wrong time, or was not a path that would bear fruit, such as the

discontinued work with HMP Gartree. These are key decisions, and concerns how a system's boundaries are delineated, which helps maintain its identity.

As a result of becoming aware of what is within and beyond the scope of the project, the project team and Board members acquire a clearer sense of what the project actually is. It becomes an object of scrutiny, it has limits, a set of properties that stake out its territory and differentiate it from its surrounding milieu, and set it apart from other projects engaged in similar activities. Consequently, this process of objectifying the project facilitates a flip in perception: no longer is one immersed in the project, but one can begin to see it as if from the outside. Again, this creates a space to look at the project differently, from a different perspective, which is the origin point for the emergence of a second order cybernetics, the study of observing systems.

8.3.6. Discovering and transcending limitations:

The last of the sources of impetus that may be candidate conditions for triggering a shift in the SHP from a first to a second order learning system is that the project began to become aware of its own limitations. The limitations that are of interest here are not those that are outside of the project's scope or remit. These limitations are better construed as boundary markers that differentiate between what the project does and does not do. The limitations that are relevant to the shift from first order to second order learning system are the limits to the design model and its capacity for learning that are inherent to the project model itself. Hence, in previous sub-sections this has been identified as the differences between the delivery and enabling ethos, for example, but the notion of inherent limitations to the model itself can also be understood in terms of the performance evaluation processes through which the project is judged.

In keeping with the project's embrace of an enabling ethos, it became aware that it was being evaluated for its performance against indicators

predicated on a delivery ethos. On one hand, this became apparent on the basis that the Lottery indicators are primarily quantitative, with little facility for the project to report on more qualitative impacts, as per the following excerpt from the Chair of the Partnership Board:

> "some of the messages back to the Lottery on this learning project will be around how do we capture the quality of the project and not just the quantity of the project, because there's a lot of quality within what we're doing and we want to adequately pass that onto Lottery" (Chair, SHP Partnership Board, Partnership Board meeting, 2015-02-11).

The Partnership Board Chair's observation about the Lottery reporting gloss over qualitative data in favour of quantitative data was ratified in the subsequent Action Research meeting by a member of the project team who noted that

> "the inherent problem with Lottery projects [is that] they're interested in big numbers, they're not interested in the quality of the interaction" (SHP team member, Action Research meeting, 2015-03-27).

Therefore, one of the limitations that the project became aware of concerned the monitoring and evaluation framework in use by the Lottery with a focus on large numbers and a lesser emphasis on qualitative narratives of change. Moreover, by and large, the Lottery Funding Officers tend to be more concerned with financial aspects of the reports sent by the project than with the performance of the project relative to the indicator set itself, which raises some intriguing and provocative questions about what learning the funder thinks that it is extracting from funding such projects.

A further limitation the project encountered concerned the nature of the indicators supporting the six outcomes, a discussion which has already been treated in detail above.

A third set of limitations that seem to have been integral to triggering the shift from a first to a second order system concerns the process through which the project as a whole came into being. Even taking the contentious relationship between TTMH (Transition Town Market Harborough) as originators of the expression of interest and the subsequent 'colonisation' of the process by the RCC, at least as this history is recounted by representatives of TTMH, the design process that characterises a first order system is predicated on a set of assumptions which become embodied in the generated system itself.

However, the enabling role involves listening and co-researching, far more than it does instructing and informing. As a result, this shift from a delivery to an enabling model reflects a significant disruption to the design of the project. In practice, a different project was, in effect, realised, which invited a set of different relationships with stakeholders than it may have done if it had been following the original design parameters of delivering, rather than eliciting, sustainability.

It is appropriate now to revisit the original research aim in light of the findings yielded from the thematic analysis.

8.4. Research aim: How a community-based project becomes a second-order learning system through continuous developmental adaptation to the constraints of its operational domain to maintain its relevance as an intervention.

A common theme running through the six parameters associated with the case study CBS project becoming a second-order learning system concerns the locus of the project team's attention. Each of the six parameters seem to suggest that the change from first to second order originates at the point where the customary locus of attention, or observation, is shifted in some way,

resulting in a novel and unfamiliar perspective, even if only transitory and briefly.

While this might seem surprising or even confusing at first, when the notion of cognition is disentangled from its traditional baggage of computational manipulation of symbolic representations and reconfigured, via enactive cognitive theory, as construction, how these shifts in the observational locus engenders a learning system becomes more evident. As Clarke explains:

> "second-order systems theory's claims for the autonomous emergence of knowledge […] rest on the premise that self-referential closure is the necessary condition of any system capable of producing an observation of its environment" (Clarke, 2014: 90).

To put this less technically, by shifting the locus of observation, such that the project comes to see itself anew, for example, new distinctions are drawn by the observer, and new distinctions bring forth new worlds, or universes of reference (Spencer-Brown, 1973; Keeney, Keeney and Chenail, 2015).

The orthogonal conversations (Mendez, Coddou and Maturana, 1988; Efran, Lukens and Lukens, 1990) between myself as the Action Research facilitator, the friendly-outside, and the project team are sufficiently within the same club of referentiality, but also sufficiently outside of that club of the project's 'norm' that it bridges the emergence of alternative ways of seeing things. New ways of seeing things facilitates new solutions to old problems, including the dissolution of the linguistic community which constituted the problematic system in the first place (Anderson and Goolishian, 1988).

The research aim appears to have been met. If the research aim were to be stated as the question "How might a community-based project become a system of learning about continuous developmental adaptation to its dynamic operational context?", it may now be answered as follows: A community-based

project might become a system of learning about continuous developmental adaptation to its dynamic operational context through a systematic and methodical deconstruction of it's self-referential closure. Of course, this blunt response needs unpacking, and in turn this will lead to the concluding task in this thesis, the establishment of a prototype developmental evaluation framework.

To deconstruct self-referential closure may sound technical and exotic, but basically means shifting one's perspective. While projects do not have perspectives, because despite the talk of a learning organisation, aside from the meta-identity attributed to the people and the activities that the people do in the name of a given project or organisation, an organisation remains its constituent members. But, critically, the members are themselves distinctions in the conversational domain of human languaging.

It will be recalled from Chapter 6 that humans are realised through languaging, and that languaging does not describe a world already out there. Rather it brings a world into being through the drawing of distinctions that, through use and the recursivity of language, become abstractions of abstractions that we remain blind to the origin of the world at the very point that we realise it operationally. This is the blind spot of operational closure, and to see it requires that we shift our focus of attention, that we change perspectives.

To do so often requires the engagement of someone who is a friendly-outsider, one who can act as a bridge between the conversational club of the project which maintains the set of distinctions about how the world is and how it works in one way, and the non-project club of alternate interpretations and distinctions. This friendly-outsider engages with the project in an authentic not-knowing way (Anderson and Goolishian, 1994; Anderson, 2005), which amounts to a refusal to play the 'language games' of the project (Wittgenstein, 1968), and which thereby disrupts the habituated ways of thinking and talking

and seeing. This can be achieved through systemic Action Research (Helmfrid, Haden and Ljung, 2007; Stephens, Barton and Haslett, 2009; Bell and Morse, 2010; Burns, 2010; Eksvärd and Rydberg, 2010; Flood, 2010) using a facilitator external to the project.

To learn requires a disruption, a breach from what one thinks one already knows – the 'gappyness' described by Dervin (2003). For a project to become a system of learning, it must participate in the methodical and systematic disruptions of its habituated patterns of punctuating its domain of operation, which entails making itself strange, different, an object for observation to its own members. This is the crux of second-order cybernetics as the science of observing systems – that is, how systems observe in terms of the operations of observation that constitute what is observed.

For a community-based project to make a shift to become a second-order learning system, it is apparent that the project as a whole is to engage systematically and critically with what it thinks it knows. It requires a process of break downs, wherein what is known is made strange and unfamiliar in order to bring into view again without the baggage of sclerotic encodings that fix it as a thing in itself, unassailable, and immutable. This permits consideration of the first two research objectives. The remaining three will be considered in the next chapter.

8.5. Research objective 1: How do CBS actors understand their roles as facilitators of change?

The SHP team appear to have taken on the role of facilitators of change under the broad mantle of what they term the enabling ethos. It is evident that this has not always been easy for the team to maintain this approach, and sometimes the clear distinction between enabling and delivery becomes

blurred. Nevertheless, the team articulate their roles as finding out what local stakeholders are interested in, what matters to them, what their priorities are, and then attempting to align themselves with these expressed areas of interest.

The project's alignment with stakeholder interest is expressed through financial investment, for example, in producing the first two versions of the Food and Drink Map free of charge, or investing in the start up of edibLE16. Most often though, it involves providing a secretariat function for nascent groups, such as Harborough Energy, or the Food Forum.

Front-line CBS practitioners assume a dual role: on one hand, they might be construed as sustainability ambassadors to a local community. Their ambassadorial skill set includes shaping the nature and meanings of sustainability in ways that are more-or-less commensurate with the interests and values of the host community. It has been a deliberate policy of the project to steer clear of an approach that might be interpreted as judgemental:

> "Sustainability is that strange, it's that 's' word that people shy away from as soon as you utter it, you can see people going <OK what're you going to tell me I can't do now, or I can't eat now, or I can't … what's next?>, and so maybe they've [MH] been waiting for us to get to that, but we've not got to it yet." (SHP team member, Action Research, 2015-03-27).

On the other hand, they are problem-solvers who navigate the terrain of multiple perspectives (or agendas and vested interests) while laying out delivery systems through which the accepted dimensions and nature of sustainability can be realised. Front-line CBS practitioners are involved in making sense of their social environments, seeking clues and cues that will help them identify points with which they might leverage local support and interest, ways of opening doors to have audience with influential actors in the community networks, and opportunities to affiliate the ambitions of the project with work and policies already underway.

CBS practitioners as sustainability ambassadors continuously distinguish among potential leads and opportunities that they might follow up on, opportunities to make connections, an openness – even vigilance – for weak ties (Granovetter, 1973), in order to exploit their strength potentiality:

> "you just have to be known. Networking is so key – not only going to networking meetings, which with hindsight I should have done earlier, but going out to the shops, showing my face, becoming a customer, spending a bit of money, going to WCF shop because if I only bought via e16 I wouldn't have built up the links with other shops and businesses across the town. And people see your face but having a recognised face is incredibly key, especially with the food and drink side of things." (SHP team member, Action Research, 2016-09-13).

The project team evidence an appreciation for the importance of fostering quality relationships, based on a history of trust, of enacting "Horton's Rule[69]" and for following up on commitments. This attention to the quality and respectful conduct of interactions contributes significantly to the project's reputation and good standing, which has been augmented by the good will and social capital the project has garnered through its non-partisan approach to working with the town's shops and businesses, and the production of the food map.

Finally, while it may well be accurate that the project team are knowledgeable in their own ways, the team also approach engagement with others in a humble way, inviting and drawing out expertise from those they engage with.

As a result of this practice, deliberate or otherwise, the project help lay the foundations for creating a learning environment, and are apparently open

69 Horton's rule is say what you mean, and mean what you say. From Dr Seuss "*Horton hatches the egg*" http://seuss.wikia.com/wiki/Horton_Hatches_the_Egg Accessed November 16th, 2016.

and receptive to being taught by others who evidence experience in a given field, such as energy policy and technologies.

8.6. Research Objective 2: How do CBS actors generate learning from M&E to inform practice?

The learning that the project team seem to have generated from their experiences with the M&E framework is, ironically, a realisation of the inadequacy of quantitative indicators, and the oppressiveness of the tyranny of indicators that constrain what the project identifies as a priority. This was an insight generated through the use of Action Research as part of the project design to stimulate, capture, and reflect on the team's learning processes.

This is not disdain for indicators *per se*, but rather for inheriting a set of indicators that shape and constrain how the project is to engage with the local people and what it is to prioritise, even when these may not be congruent with what local priorities are. It is worth illustrating this with a quote by a member of the project team during the focus group I facilitated with them about their experiences with M&E (2016-07-12). In response to my question "What would make M&E work easier for projects such as SHP?", the following discussion ensued:

> "a proper [data collection] tool, clearer targets or more holistic targets and a holistic view initially. I think you need some targets – but not necessarily numeric targets – a few numeric targets but not everything; some of it needs to be comments, and feedback.
> "But, if you get to design your own targets, then you know how you're going to hit them and measure them and justify them, and collect them, as part of that designing process. If you're just handed a whole set of targets then you have to figure out where they came from – what they were thinking of when they did these and how were they thinking that we were going to collect and measure and justify them."

The members of the team appreciated how these conditions arise, and attributed the cause of this to the process of bid writing itself:

> “I think a lot of the problem is the way – particularly when you go for funding bids – you have someone who writes that bid who will not be delivering probably. In fact, it's probably very rare that you do and therefore there's no realism in those targets … they're just plucked from other bids.
> “And bid writing's an art isn't it, bid writers write stuff that's going to get the funding – that's their job to get the funding.
> “And that's why those targets creep all of the time” (SHP team discussion, Focus group, 2016-07-12).

In addition to the preference towards quantitative over qualitative performance evaluation, it also became apparent that one of the challenges associated with the indicator set supporting the project outcomes had to do with the scale and focus of some of these which also favoured a delivery-style approach. Of the six outcomes, three were identified as being problematic in some way – as not realistic, as being insignificant or meaningless, or as being too difficult to measure accurately. These concerns are highlighted in the following paragraphs.

The second outcome concerns bringing about a reduction in carbon emissions in the business, domestic, and school sectors of Market Harborough. This outcome is supported by three indicators. Of these, two are considered problematic. The first indicator seeks a 10% reduction in CO_2 emissions due to energy use in Market Harborough. However, as expressed by the SHP Project Manager at a Partnership Board meeting, part of the problem is simply due to the time lag in being able to access the relevant data:

> “There’s the 10% reduction in carbon dioxide which is the stuff we are struggling to measure because the data lags two years” (SHP Project Manager, Partnership Board meeting, 2015-02-11).

However, the other part of the challenge with this indicator is the sheer scale involved relative to the degree of influence a project such as SHP could leverage, especially given other factors such as new housing developments and an inability to influence basic energy infrastructure:

> "Should measure the direct impacts of interventions, so if you're looking at carbon for example, you should be able to say 'well, we did that and that's the carbon reduction' so just because we've taken out 800 tonnes of carbon, it doesn't mean that the total carbon in Market Harborough has gone down" (SHP Partnership Board member, Partnership Board meeting, 2014-11-19).

The second indicator supporting this outcome was also considered challenging. This indicator calls for a reduction of 200 tonnes of CO_2 emissions per annum for each of the five years of the project. Interpreting this into practical activity that the project could take or seek to influence means that

> "the 1,000 tonnes of carbon dioxide emissions which would essentially be a count of this number of cavity walls insulated, this amount of PV and you count it up until you get to 1,000 tonnes which is nigh on impossible" (SHP Project Manager, Partnership Board meeting, 2015-02-11).

In an effort to reconcile these challenges for outcome two, the approach taken by the project was to:

> "keep a carbon target in there because we're starting to get the tools to be able to put carbon savings to things that we do, when we get around to doing them, but to reduce it [the target], so to go back to Lottery and say 'we've done this research, we think this is what it would take to get there, therefore we don't think we're going to get there, so we want to reduce the target'" (SHP Project Manager, Partnership Board meeting, 2014-11-19).

Agreement about the approach the project needed to take was reached at a Partnership Board meeting in early 2015:

> "In the end, what we've actually thought about is why don't we have a kilowatt target for renewable energy that we can attach to Harborough Energy and we can then convert that into carbon dioxide, but it's a target that is actually focused on the project, it's focused on doing something and is measurable – eminently more measurable than the indicators is at the moment and obviously less scary as well" (SHP Project Manager, Partnership Board meeting, 2015-02-11).

And, more bluntly, the concerns raised about the indicators are expressed in the following exchange between Partnership Board members and the Project Manager:

> "In terms of the 10% reduction, we're recommending that we scrap that entirely because it doesn't tell us anything about the project at all.
> "Yeah, that's just a nonsense – it's not rational at all.
> "So if we park the 1,000 tonnes, everybody's happy with that?" (Discussion at Partnership Board members, Partnership Board meeting, 2015-02-11).

However, carbon indicators were not the only source of difficulty the project encountered in terms of the outcomes and indicators. The second outcome that presented a challenge is outcome three which specifies the increase in local resilience through increased use of natural resources.

One of the two original indicators for this outcome set an economic value of local natural resources used annually at a target of £750,000 by the end of the project. This posed the concern about the scale of the indicator and how it could even be measured, as expressed at a Partnership Board meeting:

> "some of them [the targets] are a bit – I mean, this one here, which is "economic value of local natural resources used per year" which is £750000 is quite a difficult thing to measure and a very difficult thing to achieve and might not be the right sort of thing to be looking at things in a different way might be more realistic" (SHP Partnership Board member, Partnership Board meeting, 2014-09-10).

This was a concern that was reiterated at a later Partnership Board meeting:

> "This is focused around that one target concerning £750k worth of natural resources used in Market Harborough over the lifetime of the project – how do you even start to measure it, let alone achieve it?" (SHP Partnership Board member, Partnership Board meeting, 2014-11-19).

To some extent, this is rehearsing discussions in previous chapters. However, the learning generated from the M&E informs a type of practice that considers indicators to be a burden, mostly irrelevant to what the project are doing and trying to do, and which track data sets that are difficult to measure, difficult to define, and difficult to access. As expressed during the focus group with the project team:

> "People shouldn't be focused on hitting targets; people should be focused on developing projects – what does the project need? What do I need to do to develop the project to get it to where it needs to be going? Not what numbers do I need to be hitting. No where else does this happen. It's only in funded projects where they've got to count beans to justify the money being given out. There's no quality in that in the target-hitting world" (Conversations with SHP team, Focus Group, 2016-07-12).

Of course, this is not new, and these concerns strongly echo the findings from the EVALOC research (Hobson, Hamilton and Mayne, 2014; Gupta *et al.*, 2015; Hobson, Mayne and Hamilton, 2016).

As a consequence, in direct answer to the second research objective "How do CBS actors generate learning from M&E to inform practice?", it would appear that, by and large, the project does *not* see their M&E as a source to inform practice, but rather tends to regard it as a parallel process that is followed to satisfy funders, but which seemingly has only a tangential relationship to the project's own continuous improvement.

Such findings are consistent with those from other studies into community-based projects (Carman, 2007), including those designed to elicit international developmental change (e.g. Ramalingam, 2013; Ika and Donnelly, 2017) and those concerned with sustainability (e.g. Letcher, Roberts and Redgrove, 2007; Dunkley and Franklin, 2017). There is an evident need for projects to utilise intelligence gleaned from M&E to promote adaptation to maintain their relevance and fit.

8.7. Developmental evaluation framework: A prototype.

In drawing this chapter to a close, this section attempts to distil the research described in this thesis into a tool that might find practical application with projects to help project teams become systems for learning about what works to elicit change in the direction of sustainability outcomes. The following framework for developmental evaluation is intended to foster conversations among project team members, and interested stakeholders. It can be used as an evaluation tool to track how the project is engaging in learning activities and whether such activities are generating new forms of knowing.

It is important to be clear that this is not intended as a recipe, nor are any claims being made that I – or even anyone – might know *how* to elicit sustainability outcomes, at least in the abstract. Instead, the framework is a tool with which to elicit from practitioners ways of thinking and enacting their roles as practitioners in ways that might open up space for them to think about and engage with their operational domains differently. The tool comprises a series of questions intended for use in evaluating projects in order to help those projects become systems of learning, in addition to, or alongside the project's efforts to achieve indicators and outcomes. The framework is given in a matrix format in Table 8.1., below, and is intended for use alongside formative and summative evaluation tools, as part of a repertoire of tools.

Domain	Prompts
Challenging self-referential closure	• What are the project's 'sacred cows'? • What can the project team *not* talk about? • What conversation topics elicit discomfort, frustration, sadness, anger? • Who speaks on behalf of the project team? • Does the project draw on an external facilitator for Action Research?
Bound the focal system(s) to make relationships explicit:	• Define project boundaries – what is inside/ outside the boundary? • What are the causal (simple and non-linear) relations in effect? • From whose perspective are the systems defined? • How different are the maps when defined from different perspectives? • How does the medium influence (constrain/ enable) the project? • How does the project influence (constrain/ enable) the medium?
Adopt alternate speaking positions/ perspectives when strategising an activity:	• Can multiple vested interests be identified, and assigned names/ titles? • In planning meetings, are multiple perspectives included? • Which perspectives are excluded and why/ how? • Do the project team take it in turns to participate from the perspective of a 'critical friend'? • What metaphors seem to appropriately describe the activity being planned? • What is the story of the planned activity from some point in the future looking back?
Account for double description in understanding and explaining events and activities:	• What accounts do the project have for what caused something to happen? • What accounts do the project have for what stopped other events from occurring? • What is the next smallest scale to that of the activity/ event being discussed? • What is the next largest scale to that of the activity/ event being discussed?

Table 8.1. *Prototype Developmental Evaluation Framework*

These prompts have been tested during the facilitation of Action Research meetings with the project team in an effort to help stimulate the team to reflect on their learning in ways that was not occupied with an instrumental focus. Feedback from the team members suggests that they found the prompts challenging, which suggests some success in the prompts being strategies of stimulating project actors to think orthogonally to the way that they might traditionally do. The prompts used here can be elaborated on and modified according to the context of use and the dynamics of the conversations that unfold. It is hoped that these might even encourage further elaboration and creativity with respect to developing more questions.

What is noteworthy here however is that these are questions – there are no statements or declarations. Learning is understood in this research as the creation of *new meanings*, and as structure determinism informs us, this only happens as determined by the project actors. The best that an external facilitator can offer is to provide an environment within which the creation of new meanings becomes possible, although it can never be guaranteed.

The foregoing framework then is a prototype guide to co-constructing a learning facilitative context for project actors to disrupt habituated patterns of drawing closure on meaning, and to shift perspectives in a systematic and methodical way under conditions of trust and safety.

The domains in the prototype are based on the present research, and are briefly discussed and cross-referenced to the appropriate sections of this thesis, as follows:

Challenging self-referential closure:

This domain contains a set of prompts that draw on the concept of orthogonality (see section 6.5.4., above). Predicated on the autopoietic and enactive understanding of language as the second-order coordination of

consensual distinctions that bring forth a world, by engaging project team members in orthogonal interactions, the evaluator positions themselves to straddle the conversational domain. In this way, the evaluator remains sufficiently connected with the team members' distinctions and ways of constructing the world, while is simultaneously anchored to other constructions. This helps the evaluator to not become co-opted into the team's language community.

This is not to suggest that the evaluator has access to any objective world, only to a world that is not contingent on the consensual linguistic domain of the team being evaluated. By straddling two or more consensual domains, the evaluator is able to introduce different ways of framing and making sense of the worlds distinguished and described by the team members.

Because cognition is understood as relational (unity *plus* medium, including the medium of language), by adopting an orthogonal perspective, the team members are invited to think differently, to draw different distinctions and generate alternate meanings. In so doing, self-referential closure on the part of the team is diminished and, in Bateson's (1972) phrase, news of a difference that makes a difference – i.e., information – is generated.

In a more common vernacular, this domain encourages evaluators to obtain the critical balance in perspectives, such that s/ he is sufficiently in the loop with respect to how the team members understand their world, but sufficiently outside of it to not get caught up in group think and the currency of shared assumptions. This balance enables the evaluator to act as a critical friend in a way that is perceived as originating from a place of curiosity and genuine interest, rather than from an attitude of judgement.

Bound the focal system(s) to make relationships explicit:

The second domain is rooted in common systems research methods that require the system to be bounded or constrained (e.g., Midgley, 2000; Jackson, 2001). In the context of this research, this is discussed in more detail in section 6.5.3., above, especially with reference to the calculus of indication (Spencer-Brown, 1973).

The point here is that all participants in a conversation enact *a* world, which, although it may overlap and intersect with the worlds enacted by others, does not reduce to the *same* world (which is the claim of the positivist and reductionist paradigm). Consequently, it is important that participants are able to specify the worlds that they enact in the course of languaging the systems of interest. While this will not lead to the same point of reference, what it does do is to articulate the focal system as a 'boundary object' (Star and Griesemer, 1989).

Once the focal system, as boundary object, has been articulated, participants can either draw this physically or use some other forms of notation (e.g., 'rich pictures', Checkland and Scholes, 1990) to make the boundaries of the focal system more explicit. From this, influences 'into' and 'out of' the focal system can then be identified and traced, and in this way, common points of shared reference are developed that facilitate clarity.

Adopt alternate speaking positions/ perspectives when strategising an activity:

The third domain also draws from section 6.5.3., above. This is closely related to the second domain, but here the focus is on populating the boundary object of the focal system and its various relations in an explicit recognition that any given system can be described, and is enacted, according to the multiple perspectives of the interlocutors.

This domain is also about making the ethical implications of speaking positions more explicit insofar as the prompts seek to elicit participants in naming the position given authority and constitutive power (Foucault, 1977) when it is adopted. Bearing in mind that there is no view from nowhere, the origin of the perspective being adopted by participants is significant and is intended to help reduce the risk of perspectives being sidelined or marginalised.

Finally, this domain also encourages participants to engage in temporalising their reflections by considering different temporal scales and longer term consequences of events put into motion in the present. This seeks to anticipate the downstream effects of changes made in the present to respond to challenges that may have longer term and unintended consequences.

Account for double description in understanding and explaining events and activities:

The final domain seeks to elicit how participants account for the events that are being described during the developmental evaluation. Simply, this seeks to trace how participants understand causal chains, whether this is in terms of a single (a positive description – what causes something?) or a double description (a negative explanation – what stops something else from occurring?), as described in section 7.4.6.2., above.

Complexity may be characterised, in part, as stochastic, with multiple influences in effect at any given time depending on how the system is bound. This domain seeks to draw out these accounts from participants about how events occur, how processes emerge and take shape, and how what manifests with respect to experiences and understandings generated by team members are understood.

This domain also explicitly invites participants to recognise the spatial scales that contextualise the focal system, and to consider how the focal system

both is nested within next larger systems, and ‘contains’ smaller scale systems in turn. Again, this draws on the work of Spencer-Brown, and the cognitive processes of enacting a world.

8.8. Chapter synopsis:

Through seeking longevity beyond the funding window, the SHP has began to evidence a qualitative shift from a delivery system to a second order learning system that becomes self-aware of, on one hand, its limitations – how to engage and interact with the Market Harborough public – as well as its scope for doing something meaningful. This shift is evidenced by the project team and Partnership Board being less concerned with delivery *vis-à-vis* specified outcomes, but instead appears to transcend these in its engagement with members of the (business) community in building local capacity. This, in turn, helps maximise the town’s resource base in ways that are more resilient.

It is possibly this self-awareness that led to the shift from first to second order learning systems, where second order learning systems generate the context for “whatever is designed and occurs when designers show awareness that the design setting includes themselves and their history” (Ison and Blackmore, 2014: 5). Beyond the first order constraints of being a pre-defined and pre-determined system set into motion in an operational domain that was not already incorporated into its design, the SHP begins to evidence a self-awareness.

The chapter concludes with a prototype developmental evaluation framework that is sufficiently generic to be used with any community-based project. It comprises four thematic domains, each of which is supported by a number of question prompts. The domains are themselves drawn from the present research, and informed by systems theory, enactive and autopoietic theory, and second-order cybernetics. Principally, these are strategies for

engaging with project team members to elucidate, clarify and to make explicit the learning, innovation, and construction of a project's work within the context of a given setting. This thesis is concluded in the following chapter.

9. CONCLUSIONS AND RECOMMENDATIONS:

This research concerns how traditional approaches to the evaluation of community-based developmental projects tend to be constitutively blind to the learning and innovation generated by project actors due to a methodological emphasis on outcomes and impacts. What such traditional approaches to evaluation tend to overlook are the generative aspects of the learning project actors undergo in reflexively adapting to changing circumstances in order to maintain the project's relevance or goodness of fit to a given dynamic complex milieu.

It is precisely this reflexive process of adaptation that is at the heart of the present research. Consequently, the study has not attempted to provide an evaluation of a project relative to sustainability outcomes, nor has it focused on sustainability *per se*. Sustainability is an example of a wicked problem, and the challenges facing a project to respond meaningfully to such a problem while situated within the complex context of a community setting provides the specific case for exploring how a community-based project becomes a second-order learning system.

The research made specific reference to community-based sustainability (CBS) initiatives, and extended this to include international developmental aid projects, because these types of projects are characterised by operating within dynamic conditions of complexity and uncertainty. While both of these types of projects tend, on balance, to have poor track records in evidencing impacts, this does not mean that the actors engaged in such projects are not undergoing processes of learning and adaptation. It is just that, by and large, these developments are outside of the scope of traditional methods of evaluation. Hence when CBS initiatives are co-opted as delivery vehicles for the UK climate

change policy, and subjected to increasing pressure from funders to demonstrate their added value, the issue of what constitutes evaluation for learning and the degree to which evaluation is fit for this purpose moves to the fore.

This research has sought to explore how a community-based project becomes a second-order learning system through continuous developmental adaptation to the constraints of its operational domain to maintain its relevance as an intervention. This aim was supported by five research objectives (see Section 1.3., above), and since the first two of these have already been discussed at length (see Sections 8.4. and 8.5., above, respectively), only the remaining three objectives are discussed below.

9.1. Research Objective 3: To undertake an extended single case study of a Community-Based Sustainability project as a participant observer, along with an elaboration of the project's context of operation:

The research focus into second-order learning (that is, learning to learn thereby engendering the capacity for reflexive adaptation to changing circumstances) was explored with reference to an extended single case study of a five year funded CBS initiative, the Sustainable Harborough Project (SHP), with which I worked as a participant-observer. Finally, the community context within which the case study project was situated was considered as a social-ecological system (SES), and a brief history of Market Harborough, along with its geomorphology and ecological character were explored, and a demographic profile of the local population was generated using open data sources, such as ONS. This work is detailed in Chapter 4 above.

I had the dual role of supporting the project team to develop their M&E framework and facilitating quarterly Action Research meetings with the project

team, as well as of conducting ethnographic research observing the day-to-day activities of the project, especially in the context of meetings and public events.

Data for this study was an amalgamation of project documents and audio recordings of meetings, focus group and semi-structured interviews, as well as public stakeholder responses to an on-line survey. Audio recordings were personally transcribed, and these were then subsequently coded using a coding dictionary informed initially from concepts in the literature review of sense-making and framing (see Chapter 2), while project documentation provided contextual information.

As detailed in Chapter 5 however, this was only partially successful, because it gave rise to themes that were superficial and instrumental, involving the content of learning, the *what*, but not the process or the *how* of learning. Consequently, a second set of literature was required to probe learning as an active process independent of the specificity of the content.

9.2. Research Objective 4: To explore the applicability of enactive cognitive science as a heuristic in the facilitation of project actor learning through developmental evaluation:

To overcome the limitations identified in Chapter 5 with the code dictionary developed with reference to sense-making and framing concepts, I drew on a set of theoretical literature that equipped me with a technical vocabulary with which to consider complex and second-order cognitive systems. This literature, the focus of Chapter 6, is a biological account of cognition and language emphasising that language coordinates how the world is brought forth and acted upon by observers through the activities with which observers realise themselves in the present. Language therefore is not concerned with the transmission of information, nor is it the result of symbols but is rather the origin of symbols as a complex ecosystem of distinctions and

meta-distinctions, the origins of which we, as observers, are constitutionally blind to. Cognition, according to enactive cognitive science, is similarly not the manipulation of symbolic representations nor the processing of information, but is effective action by an observed system relative to its medium of realisation, as interpreted by an observer.

Using concepts from this literature I applied Thematic Analysis as the analytic methodology, and following deep immersion in the data set, including the process of transcribing audio recordings of meetings to which I had already been party, I generated a set of code categories and developed a code dictionary (at Appendix I). These codes were applied systematically to track for evidence of how the case study project might be construed as becoming a learning system, and then in the second phase of the Thematic Analysis, these codes were brought together to consider any emerging narrative that might bind them together coherently.

9.3. Research Objective 5: To generate a developmental evaluation framework:

By means of this method, I traced the processes through which the SHP appeared to demonstrate that it had indeed shifted from a first order to a second order learning system. This was characterised by project actors acquiring the capacity to learn how to learn to influence the developmental trajectory of the project's work to elicit changes in the direction of sustainability outcomes. As a result of this, I developed the prototype developmental evaluation framework that might be used as part of an evaluation repertoire to track how the evaluated initiative is engaging in the processes of learning how to learn (see Table 8.1., above). This framework is considered a supplement to both formative and summative evaluation practices, and it is anticipated that with further refinement may be useful as a learning tool in its own right. The process of refinement

however is beyond the scope of the present research. Nevertheless, the framework is one of several original contributions this research makes.

9.4. Contributions of the research:

This research makes three original contributions to knowledge. To the best of my knowledge, this is the first time that enactive cognitive theory has been recruited to inform a Thematic Analysis of a community-based project, and this is therefore an original contribution to the qualitative research and developmental evaluation literatures.

The second original contribution by being one of very few qualitative case studies of a community-based sustainability (CBS) initiative, and of those, possibly the only such study to draw on autopoietic and enactive cognitive theory to explore how such initiatives might acquire the reflexivity to become a learning system given the complexity of their operating contexts.

Finally, I am not aware of any other study that has considered a CBS from the perspective of becoming a learning organisation. While some studies have researched social learning practices at the intersection of the CBS initiative and its stakeholder communities, I have not been able to find any other study that constrains the research focus to the CBS initiative itself in terms of how it generates and then uses its learning to improve practice. This, then, is the third contribution made by this research.

9.5. Limitations of the research:

There are, of course, limitations to this study. For example, no attempt was made to draw any connection between evidence of becoming a learning system and improvements in achieving the project's outcomes. However, there are two reasons for this. First, the project is still underway, so any summative or

impact evaluation would be premature, and given that the project seems to experience breakthroughs in activity after periodic bouts of very little happening in a concrete way, drawing a conclusion now before all of the data is in would not be giving the project the benefit of the doubt. The second reason is because this research was not so much interested in whether or not the performance of the project was improved, but rather on the processes through which the project evolved in its learning to learn how to do sustainability-related work.

A second limitation to the study was that it involves no comparisons with any other project, so it because there are no comparators, it is entirely feasible that the six thresholds identified in Chapter 8 that suggest a transition to a second-order learning system may be common to all such projects as the SHP. Intuitively, I suspect that this is *not* the case, and from limited knowledge of the 11 sister CLS projects, this doesn't appear to be the case. Nevertheless, the single case study approach is justified given that this is both pioneering qualitative research, and that once the prototype developmental evaluation framework was established, this can now be used in the cross-comparison of multiple cases to discover if these findings are generalisable.

A third limitation is the influence of my own researcher perspective and the possibility that my evaluations have been clouded by something akin to the *Halo Effect*[70]. It is a legitimate concern, and having been immersed in researching and working with the project for three years, it would be difficult to not be swayed positively by the project. I have come to like the various members of the team and the Partnership Board, and felt empathy as they underwent different challenges and struggles.

However, there is another side to this apparent limitation and it is that, as we learn from autopoietic theory, there is no god's eye view. Everything that is said, that is observed, is said or observed by someone somewhere. In fact, this

70 A cognitive bias which renders one blind to seeing the faults of a person, place, or organisation due a fixation on their attractive properties (Thorndike, 1920).

is the crux of second-order cybernetics, which is the cybernetics of cybernetics, or better, the study of the *observing system*. As an observer of the SHP it is imperative that I make no claims that this is the true, the real, nor the only SHP. Actually, I am more inclined to argue that there are as many versions of SHP as there are observers of SHP, and all are as equally valid and limited as each other. And this is the nub of complexity science, which is why a linear and reductionist project design and cognitive model fall far short of having the degree of variety (complexity) requisite to a proper accounting of complexity: there are multiple perspectives, multi-verses, and truth claims are demands for obedience. Consensus comes through agreement, not the imposition or the force of will.

All this to say that indeed, of course this study favours a certain perspective. I don't know how it could ever not do so, and that is not simply due to it being qualitative in nature. Even quantitative research, despite the alleged security of numbers as a defence against a lack of 'objectivity', is not without the favour of observer-generated influence. Rather than attempting to avoid this, it is possibly better to acknowledge it and own up to it. This recognition has informed my preference to use the first person singular throughout this text, rather than the third person, in order to own my epistemological perspective.

9.6. Validating the research findings:

This, of course, doesn't mean that anything goes. It only means that I as the researcher must assume responsibility that the distinctions I have brought forth are my own, shaped and influenced no doubt by my culture and life experience, my privilege as a white male pursuing an advanced degree at a first world university, but are finally mine. What is more invidious from a research perspective is whether or not the findings are valid. Do they withstand critical scrutiny? Is the methodology replicable? Has the research endeavour been ethically sensitive? To all of these, I would submit that yes, the findings are

valid, that they withstand critical scrutiny, that the methodology can be replicated, and that the endeavour itself has been ethically sensitive. To take each of these in reverse sequence.

The ethics shaping and underpinning this research is predicated on formal approval from De Montfort University's Ethics Committee for the Faculty of Technology (attached at Appendix A), and all semi-structured interviews required participants to read an information sheet about the research (attached at Appendix B), and then to sign their consent (attached at Appendix C). Whenever a meeting was audio recorded, verbal permission was sought and obtained for this to happen. Under the very rare occasions that a participant didn't want something recorded, the recorder was switched off for the duration of that part of the meeting until I was given approval for it to be turned back on. Transcripts are also available should any meeting participant wish to read them, and this contributes to the replicability of the findings. Using the same methodology (Thematic Analysis), and presumably the same code dictionary (attached at Appendix I) follow up research may draw similar conclusions. The actual use of the software (RQDA) is shown in a screen grab attached at Appendix J.

Last, but not least, the question of whether or not the findings are valid may be addressed by allowing the SHP team and Partnership Board to comment on their authenticity and whether or not they can recognise the project in the discussion, and if they find the account fair and reasonable. At the November 30th, 2016 Partnership Board, I presented a six page synopsis report of the findings at that stage. The paper was available to the participants ahead of the meeting, and at the meeting I reviewed the key aspects of the text. Following this, there was a discussion about the paper and its findings. The validity of these findings was supported by the meeting participants, and the members of the project team could recognise the project and endorsed it as a fair and accurate account of the project's work.

In the Board meeting notes circulated on December 5th, 2016, the presentation of this summary report was minuted. The validation of the current research may be deduced from the minutes, which are quoted verbatim:

> "Andy's report and presentation were well received and useful for further conversations including the learning report. The feeling was that the report was a great summary of the reason for involving DMU in the first place and covered all of the original ambitions for the original brief that was put together – support and development, action learning, Monitoring and Evaluation and a study of the project. The board talked about the central theme being one that is known within Community Development circles, but that it still comes up and so needs to be better disseminated – this is a central part of the Learning Report to be commissioned" (Minutes from the SHP Partnership Board meeting, November 30th, 2016).

9.7. Recommendations:

There are a number of implications that arise from this research which may have a practical bearing, particularly for how projects such as SHP are designed, funded, and how its indicator sets are defined. These are summarised in bullet form below:

- At the outset, define only outcomes, not indicators. This means that indicators will have to be drawn up within the first year of the project's funding period. In this way, subsequent indicators will more likely be realistic, achievable and appropriate to the area.
- Projects such as this should not be funded for anything less than a five year period because change takes a long time to seed and embed and nurture.
- At the end of the funding period, the option for a social impact bond, or 'pay-for-success' model of transition financing to help newly minted SMEs become independent.
- Action Research is to be included into all projects such as this to help facilitate the emergence of second order learning among the project staff.
- Qualitative *and* quantitative indicators are to be favoured over a purely quantitative indicator set, and these should be subject to renegotiation on the basis of strong evidence that there is a mismatch.

- Projects should be encouraged to develop an enabling ethos rather than being treated as delivery vehicles that simply deliver something pre-packaged by designers who are not sited in the community setting to be affected.
- Interventions should facilitate learning in favour of specifying targets and outcomes, which means that a culture of trial-and-error, tolerance for failure, and an emphasis on supported experimentation are to be encouraged

These findings were endorsed by the SH Project Manager at the Communities Living Sustainably Celebration and Legacy Event in London (October 14th, 2016), and have been communicated to the Partnership Board in the form of a final learning report (November 30th, 2016).

What remains, but is beyond the scope of the present work, is to put these ideas to the test in a more systematic and methodical way as an evaluative and support process that encourages project innovation and reflexive learning about how to elicit sustainability-related outcomes.

Future research is required to test the applicability of the developmental evaluation framework (Table 8.1., above) for supporting project actors innovate and learn how to design and incorporate adaptation to dynamic and complex operational contexts. Furthermore, the utilisation of enactive cognitive science warrants further exploration for its heuristic value in flexible (Robson, 2002), or qualitative, design methods and for transdisciplinary research. These remain beyond the scope of the present research however, but are worthy of future exploration.

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APPENDICES:

Appendix A

De Montfort University, Faculty of Technology Application to Gain Ethical Approval for Research Degree Activities

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Faculty of Technology Application to Gain Ethical Approval for Research Degree Activities

All Research Degree Projects require ethical approval. Research Students in the Faculty of Technology should complete this form to gain Internal Human Research Ethical Approval in consultation with their supervisors and submit it to the Faculty Assessor with their 'Application to Register for a Research Degree form (RDC:R).

NOTE: If your research involves using human tissue or fluid samples or animals please DO NOT use this application form. You should seek guidance from the Chair of the Faculty Human Research Ethics Committee before starting the project.

1. Applicant	
Last Name: Mitchell	First Name: Andrew
DMU Email Address: andrew.mitchell@email.dmu.ac.uk	

If you answer any of the following questions with 'Yes', then specific ethical issues WILL be raised that MUST be addressed. You will need to explain in detail in section 3 how you will address these ethical issues.

Has your research proposal identified any of the following research procedures?

Gathering information from or/and about human beings through: Interviewing, Surveying, Questionnaires, Observation of human behaviour	Yes / ~~No~~
Using archived data in which individuals are identifiable	~~Yes~~ / No
Researching into illegal activities, activities at the margins of the law	~~Yes~~ / No
Researching into activities that have a risk of personal injury	~~Yes~~ / No
Supporting innovation that might impact on human behaviour e.g. Behavioural Studies	~~Yes~~ / No

Are there other additional factors that could/will give rise to ethical concerns e.g. communication difficulties?

No other factors are anticipated to give rise to ethical concerns.

2. Ethical Issues identified (State explicitly if no ethical issues are identified)

Human subjects will be interviewed about the following topics:

- **people they go to for information about the project**
- **their understanding of how engagement works, what constitutes information, governance and interventions**
- **reflections and input to help explain network structure results**

Data collected from human subjects will be in one or more of the following forms:

- **completion of questionnaires (approximately 15 minutes)**
- **semi-structured interviews (approximately 30 minutes)**
- **participant-observation of events, staff team meetings, and partnership meetings**

3. How these issues will be addressed:
Consent will be sought by all participants, and each has the right to withdraw at any time. The researcher is Graduate Member of the British Psychological Society and agrees to abide by that Society's Codes of ethics in conduct and research **Interviews will, unless participant declines the request, be audio recorded for later transcription. Transcripts can be made available to participants upon request.** **Questionnaires and interview themes will be trialled before being taken out to the sample**

Note: You should consider the following:

- *Providing participants with full details of the objectives of the research*
- *Providing information appropriate for those whose first language is not English*
- *Voluntary participation with informed consent*
- *Written description of involvement`*
- *Freedom to withdraw*
- *Keeping appropriate records*
- *Signed acknowledgement and understanding by participants*
- *Relevant codes of conduct/guidelines*

4. To which ethical codes of conduct have you referred?
British Psychological Society Code of Human Research Ethics (2010) (on-line at: http://www.bps.org.uk/sites/default/files/documents/code_of_human_research_ethics.pdf **). Researcher is a graduate member of the BPS (Number: 163365) and has agreed to be bound by BPS codes of ethical conduct. Reference also to the Code of Ethics, Department of Technology, De Montfort University**

Note: For the Faculty of Technology, these codes typically include those published by the BCS, ACM, IEEE or other applicable codes such as the code of the Social Research Association or specific funding bodies, such as the ESRC. Links to some of these codes are available on the Faculty of Technology FHREC website.
http://www.dmu.ac.uk/research/ethics-and-governance/regulatory-codes-and-legislation.aspx

List of accompanying documentation that MUST be submitted to support the application:

- A copy of the research proposal (Application for Registration (RDC:R) form)
- Details of the arrangements for participation in the research by human subjects (including how participants will be recruited, confidentiality procedures, copies of consent forms, any questionnaires that will be used and other documentation as appropriate)
- A copy of all the documentation provided to the volunteer to ensure the clarity of information provided
- Copies of appropriate other ethical committee permissions (internal or external) or supporting documentation
- Other documentation as advised necessary by Supervisory team

AUTHORISATION:

Signature by Applicant

Signed _____ Date Feb 24/2014

Signature by First Supervisor

Signed _____ Date 24/02/14

Name of Supervisor _____

Conditional Approval - Authorising Signature (FHREC Chair)

Signed _____ Date _____

Tick here if approval is conditional ☐

Note to applicant: If you receive conditional approval, you may proceed with preparing the project but you must NOT start data collection unless you have met the conditions and received full approval.

Conditions:

Full Approval - Authorising Signature (FHREC Chair)

Signed _____ Date _____

NOTES FOR GUIDANCE:

1 Respondents' co-operation in a research project is entirely voluntary at all stages. They must not be misled when being asked for co-operation.

2 Respondents' anonymity must be strictly preserved. If the Respondent on request from the Researcher has given permission for data to be passed on in a form which allows that Respondent to be identified personally:

(a) the Respondent must first have been told to whom the information would be supplied and the purpose for which it will be used, and also
(b) the Researcher must ensure that the information will not be used for any non-research purpose and that the recipient of the information has agreed to conform to the requirements of any relevant Code of Practice.

3 The Researcher must take all reasonable precautions to ensure that Respondents are in no way directly harmed or adversely affected as a result of their participation in a research project.

4 The Researcher must take special care when interviewing children and young people. The Faculty REC will give advice on gaining consent for studies involving children or young people.

5 Respondents must be told (normally at the beginning of the interview) if observation techniques or recording equipment are used, except where these are used in a public place. If a respondent so wishes, the record or relevant section of it must be destroyed or deleted. Respondents' anonymity must not be infringed by the use of such methods.

6 Respondents must be enabled to check without difficulty the identity and bona fides of the Researcher.

Appendix B

Semi-structured interview Participant Information Sheet

Learning and change in community-based sustainability initiatives

Participant Information Sheet

Dear Participant

I would like to invite you to participate in a face-to-face interview as part of collecting data for a research project into community transitions to sustainability and resilience. You will find more information about the study below.

About the study:

By undertaking this study, it is hoped that some answers to the following questions may be generated:

- how does learning and adaptation occur in community-based sustainability projects
- what is the nature of learning appropriate to helping to facilitate changes in community sustainability
- what counts as knowledge in the domain of community transitions towards sustainability
- how approaches developed elsewhere might be adapted to local conditions to ensure a better fit for community ownership
- how explicit knowledge of community networks facilitate engagement and the transfer of information

This research has obtained Internal Human Research Ethical Approval from the De Montfort University, Faculty of Technology, Ethics Committee, and as a Graduate Member of the British Psychological Society (BPS), the researcher is also bound by the BPS Code of Ethics.

About your participation:

Your participation in this study is entirely voluntary and will involve one face-to-face semi-structured interview of up to 45 minutes in length to take place by arrangement with yourself at a reasonable time and place of your choosing.

This interview will be audio recorded to ensure that the fidelity of your responses and the accuracy of any quotations are maintained. The audio recording may be transcribed for analytic purposes.

You may decide not to answer any of the interview questions if you wish. You may also decide to withdraw from this study at any time by advising the researcher interviewing you or by emailing andrew.mitchell@email.dmu.ac.uk or using the contact details at the end of this document. If you notify me of your withdrawal, all identifiable data will be destroyed. Once data has been anonymised it will be impossible to identify the origin and cannot be destroyed.

About the information you provide:

Any information you provide is confidential, except that with your permission anonymised quotes may be used. If you request confidentiality, beyond anonymised quotes, information you provide will be treated only as a source of background information, alongside literature-based research and interview with others.

Your name will not appear in any publications resulting from this study; neither will there be anything to identify your place of work.

Even though the study findings may be published in international conferences and journals, only the research team will have access to the interview data itself. There are no known or anticipated risks to you as a participant in this study.

The information gained from this interview will only be used for the above objectives, will not be used for any other purpose and will not be recorded in excess of what is required for the research.

We may ask for clarification of issues raised in the interview some time after it has taken place, but you will not be obliged in any way to clarify or participate further.

If you have any questions regarding this study or would like additional information please ask the researcher before, during, or after the interview.

Yours Sincerely,

Andrew Mitchell
De Montfort University
Institute of Energy & Sustainable Development, Department of Technology
Queens Building, Leicestershire LE1 9BH, UK
email: andrew.mitchell@email.dmu.ac.uk

Appendix C

Semi-structured interview Participant Consent Form

Title: Learning and change in community-based sustainability initiatives

Consent form

Please put a tick or cross in the relevant boxes.

I _____ [participant's name] agree that the material generated by my involvement in this research project may be used by the research teams at De Montfort University.	☐
I have read or been informed about the purpose of the study and understand this.	☐
I understand that while the material generated by my involvement in this research project will be anonymous and confidential it may be used for a variety of research purposes during and after the lifespan of the project (e.g. reports, publications, presentations).	☐
I understand that I can withdraw my consent at any point by contacting a member of the De Montfort University research team.	☐
I agree to being contacted again by the researchers if my responses give rise to interesting findings or cross references. If yes, please contact me at:	☐

Signature of the participant _____ Date: _____

Signature of the researcher _____ Date: _____

Contact Details

Andrew Mitchell
De Montfort University
Institute of Energy & Sustainable Development
Department of Technology
Queens Building, Leicestershire LE1 9BH, UK
Room 1.05
Tel.: +44 116 257 7981
email: andrew.mitchell@email.dmu.ac.uk

Appendix D1

Semi-structured interview protocol – Governance Variant

Semi-structured interview protocol:
Governance Variant:

Introduction:

Introduce myself, give name, student status, and relationship with the project.

Clarify that *the interview will take up to 45 minutes, that there are no right or wrong answers to any of the questions, that the questions are asked to understand what people involved in the project think and feel, and that no responses will be attributed to any individual person or organisation.*

Summarise the objective of the research: *This is part of the data collection process for a PhD thesis which is exploring the contributions of knowledge and learning to community transitions towards sustainability and resilience within the context of a funded community-based sustainability initiative.*

Ensure that respondent has *signed the permission to audio record the interview and the consent to participate form.* Remind them that *they are under no obligation to participate, or to answer any specific questions, and they may stop the interview at any time.*

Respondent:

Date:

Ask the respondent to give the nature of their role with respect to the project and what this would typically involve.

Ask the respondent to state how long they have been in that role:

Ask the respondent if they have any prior experience working with community-based projects, and if so, to say a little about that: experience and how it may or may not have a bearing on their experience with the current project:

1. Could you please describe the work you do as part of the project as if to a relative or a friend you haven't caught up with for a long time? What does the project do? How does the project go about doing it? What does a typical week involve?

2. What is it that you get out of being involved with a community-based sustainability initiative that you find most satisfying? What do you find most frustrating?

3. The project has been described as a test-and-learn initiative, to test what works with respect to community sustainability. If you reflect on your own engagement with the project to date, what has been tested? What learning has been generated through the project? Is there more still to learn, and if so, what might that be?

4. Can you share your reflections on how community sustainability, resilience and adaptation occurs in practice? How does change take place? What changes? What stays the same? How are different social actors involved?

5. What have been among the most challenging experiences you have faced as a member of the Board? How were those dealt with? On reflection, would you advise that that be done in the same way if you were do it again? If not, what would be different?

6. What expectations for the project did you have when you first considered participating, and how well have those been met?

7. If tonight, while you were asleep, a miracle happened which removed all of the constraints to Market Harborough becoming sustainable, resilient, and adapted to climate change, what would you notice upon waking up and going through your day tomorrow? What would be different? What would be the same? How would know that a miracle had happened? How would you communicate your discovery to someone from a different town?

8. If given the opportunity to do this project over again from scratch, while knowing what it knows now, how do you think such an opportunity should be approached from both strategic and tactical perspectives? What aspects of the current project's approach and work should be repeated and which should be changed?

9. Is there anything else that you would like to say about your experiences of being involved in the project or about the project itself?

Appendix D2:

Semi-structured interview protocol – Project Variant

Semi-structured interview protocol:
Project Variant:

Introduction:

Introduce myself, give name, student status, and relationship with the project.

Clarify that *the interview will take up to 45 minutes, that there are no right or wrong answers to any of the questions, that the questions are asked to understand what people involved in the project think and feel, and that no responses will be attributed to any individual person or organisation.*

Summarise the objective of the research: *This is part of the data collection process for a PhD thesis which is exploring the contributions of knowledge and learning to community transitions towards sustainability and resilience within the context of a funded community-based sustainability initiative.*

Ensure that respondent has *signed the permission to audio record the interview and the consent to participate form.* Remind them that *they are under no obligation to participate, or to answer any specific questions, and they may stop the interview at any time.*

Respondent:

Date:

Ask the respondent to give the nature of their role with respect to the project: - what does this involve on a typical day-to-day basis

Ask the respondent if they have any prior experience working with community-based projects, and if so, to say a little about that: experience and how it may or may not have a bearing on their experience with the current project:

1. Could you please describe the work you do as part of the project as if to a relative or a friend you haven't caught up with for a long time? What does the project do? How does the project go about doing it? What does a typical week involve?

2. What is it that you get out of being involved with a community-based sustainability initiative that you find most satisfying? What do you find most frustrating?

3. If you reflect on a meeting you had with members of the community with whom you work that **was successful**, can you share what contributed to the **success** of the outcome and what it was about the outcome that led you to think it **was successful**?

4. If you now reflect on a meeting you had with members of the community with whom you work that was **not successful**, can you share what contributed to the **lack of success** of the outcome and what it was about the outcome that led you to think it was **not successful**?

5. The project has been described as a test-and-learn initiative, to test what works with respect to community sustainability. If you reflect on your own engagement with the project to date, what has been tested? What learning has been generated through the project? Is there more still to learn, and if so, what might that be?

6. Can you share your reflections on how community sustainability, resilience and adaptation occur in practice? How does change take place? What changes? What stays the same? How are different social actors involved?

7. If tonight, while you were asleep, a miracle happened which removed all of the constraints to Market Harborough becoming sustainable, resilient, and adapted to climate change, what would you notice upon waking up and going through your day tomorrow? What would be different? What would be the same? How would know that a miracle had happened? How would you communicate your discovery to someone from a different town?

8. If given the opportunity to do this project over again from scratch, while knowing what it knows now, how do you think such an opportunity should be approached from both strategic and tactical perspectives? What aspects of the current project's approach and work should be repeated and which should be changed?

9. Is there anything else that you would like to say about your experiences of being involved in the project or about the project itself?

Appendix E

On-line stakeholder survey questions

1. Please indicate if you are a member of or participate in any of the following organisations (select all that apply)

1.1. edibLE16
1.2. Transition Town Market Harborough
1.3. Harborough Environment Group
1.4. WWF
1.5. Wild Life Trust
1.6. Greenpeace
1.7. Friends of the Earth
1.8. Green Party
1.9. Incredible Edible
1.10. Totally Local
1.11. Other? Please list

2. What is the nature of your relationship with the Sustainable Harborough project? (Select all that may apply)

2.1. Part of the Governance Structure or staff team (e.g. Partnership Board, Harborough Energy Board, edibLE16 Board, etc.)
2.2. I am involved in one of the related activities (e.g. edibLE16, Harborough Energy, Food Forum, Business Energy, Green Open Homes, etc.)
2.3. I am involved in an organisation that works with Sustainable Harborough (e.g. youth centre, Arts Fresco group, etc.)
2.4. I am involved with another environmentally-focused organisation (e.g. Transition Market Harborough, Harborough Environment Group, etc.)
2.5. While I am interested, I'm not really involved much in any organised activities (e.g. only on mailing list)

2.6. I am a beneficiary of Sustainable Harborough's activities (e.g. on the Food & Drink Map, etc.)
2.7. I'm involved in a different way (Please specify):

3. When did you first hear of the Sustainable Harborough project?

3.1. 2012
3.2. 2013
3.3. 2014
3.4. 2015
3.5. 2016
3.6. I don't know

4. Over what period of time have you been involved with Sustainable Harborough?

4.1. Less than six months
4.2. Between six months and twelve months
4.3. Between twelve months to eighteen months
4.4. Between eighteen months to twenty-four months
4.5. Longer than two years
4.6. Other (Please specify)

5. Over the whole period of your involvement with Sustainable Harborough given in Q4, what is the approximate average number of hours per month in which you have been able to actively engage with Sustainable Harborough?

5.1. Less than four hours a month
5.2. About eight hours a month
5.3. Between eight and sixteen hours a month
5.4. Between sixteen and twenty-four hours a month

5.5. Between twenty-four and forty hours a month
5.6. Between forty and sixty hours a month
5.7. Over sixty hours a month
5.8. I am not sure because it varies too much
5.9. Other?

6. Have you noticed any significant changes in and around Market Harborough since late 2012 that may be attributed to the work and influence of the Sustainable Harborough project? Please give as much detail as you can. If you haven't noticed any changes, please state this.

7. The project was funded as a 'test-and-learn' project to explore what works to help deliver effective local sustainability. In your experience of the project, can you comment on what you think the project has tested so far with respect to delivering effective sustainability, resilience and/ or adaptation?

8. Sustainability is one of those terms that means different things to different people. Please select one of the following statements that best reflects what the term "sustainability" means to you. If you prefer, please add your own definition in the space below.

8.1. "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs"
8.2. "The possibility that humans and other life will flourish on the Earth forever"
8.3. "The quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term ecological balance"
8.4. My own understanding is ...

9. Which of the following two statements best reflects your understanding of the term "resilience"? If neither of these statements approximate your understanding, please use your own words in the space provided.

9.1. Resilience refers to the speed and efficiency at which a system bounces back to its original shape if it is deformed (e.g. a suspension bridge swinging in high winds)

9.2. Resilience refers to the amount of pressure a system can take before it changes state and becomes something else (e.g. a lake that changes from clear water to turbid)

9.3. I understand resilience to refer to ...

10. What is your understanding of the term "adaptation"? What do you associate with the term? What do you think it involves? Please use your own words. There are no right or wrong responses.

11. In your opinion, what are some of the most important attributes (e.g. attitudes and values, skills, abilities or knowledge) at an individual scale that would help a community to transition towards a more sustainable and resilient future?

11.1. Most challenging:

11.2. Second most challenging:

11.3. Third most challenging:

12. Please share any opinions or insights you have into how the challenges you identified in Q11 above might be meaningfully tackled.

13. This research explores the contributions of knowledge and learning to community transitions towards sustainability and resilience within the context of a funded community-based sustainability initiative, so if there is anything else

you would like to add to aid this research that hasn't been raised so far, please comment in the space below.

Appendix F:

Documents and Meetings comprising Data Set:

YYYY	MM	DD	Meeting / Document Type	Transcribed	Minutes	Papers	Theme	Type
2012	5	24	CLS Harborough Partners' meeting	N	Y	Y	Bid	Meeting
2012	6	7	Review of outcomes and indicators	N	N	Y	Bid	Document
2012	6	8	Outline Project Delivery Plan	N	N	Y	Bid	Document
2012	6	12	CLS Survey	N	N	Y	Consultation	Document
2012	9	12	RCC Director's Report to Trustees	N	N	Y	Bid	Document
2012	12		Partnership Agreement	N	N	Y	Bid	Document
2012			Project Delivery Plan SRC/1/010428951	N	N	Y	Bid	Document
2013	1	25	Partnership Board	N	Y	N	Governance	Meeting
2013	3	12	Partnership Board	N	Y	N	Governance	Meeting
2013	4	10	Partnership Board	N	Y	N	Governance	Meeting
2013	5	29	Partnership Board	N	Y	N	Governance	Meeting
2013	6	11	DMU Meeting	N	Y	N	Consultation	Meeting
2013	8	5	edibLE16	N	Y	N	Food	Meeting
2013	8	21	Partnership Board	N	Y	N	Governance	Meeting
2013	9	4	edibLE16	N	Y	N	Food	Meeting
2013	9	25	edibLE16	N	Y	Y	Food	Meeting
2013	10	30	Partnership Board	N	Y	Y	Governance	Meeting
2013	11	7	Team AL – Public Food Forum	N	Y	N	AR/L	Meeting
2013	11	15	Food Forum Steering Group	N	N	Y	Food	Meeting
2013	11	19	Team AL – Late Night Shopping	N	Y	N	AR/L	Meeting
2013	11	20	edibLE16	N	Y	Y	Food	Meeting
2013	11	28	Team AL – Food Hub	N	Y	N	AR/L	Meeting
2013	12	6	Community Energy	N	Y	N	Energy	Meeting
2013	12	18	Partnership Board	N	Y	Y	Governance	Meeting
2013	12	18	Facilitated Action Research	N	Y	N	AR/L	Meeting
2014	1	15	Team AL – Energy Forum	N	Y	N	AR/L	Meeting
2014	1	22	Facilitated Action Research	N	Y	N	AR/L	Meeting
2014	1	22	edibLE16	N	Y	Y	Food	Meeting
2014	1	29	Public Energy & Water Forum	N	Y	Y	Energy	Meeting
2014	1	30	Team AL – Energy Forum	N	Y	N	AR/L	Meeting
2014	1	31	Food Forum Steering Group	N	Y	Y	Food	Meeting
2014	2	3	edibLE16	N	Y	Y	Food	Meeting
2014	2	12	Partnership Board	N	Y	Y	Governance	Meeting

YYYY	MM	DD	Meeting / Document Type	Transcribed	Minutes	Papers	Theme	Type
2014	2	12	edibLE16	N	Y	Y	Food	Meeting
2014	2	17	edibLE16	N	Y	Y	Food	Meeting
2014	2	19	Food Forum Steering Group	N	Y	Y	Food	Meeting
2014	2	26	Food Forum Steering Group	N	N	Y	Food	Meeting
2014	2	27	Team AL – Food Hub	N	Y	N	AR/L	Meeting
2014	2	27	edibLE16	N	Y	Y	Food	Meeting
2014	3	3	edibLE16	N	Y	Y	Food	Meeting
2014	3	4	Food Forum Steering Group	N	N	Y	Food	Meeting
2014	3	12	edibLE16	N	Y	Y	Food	Meeting
2014	3	19	Team AL – Advertising	N	Y	N	AR/L	Meeting
2014	3	19	Food Forum Steering Group	N	Y	Y	Food	Meeting
2014	3	20	edibLE16	N	Y	N	Food	Meeting
2014	3	20	Business Energy Efficiency	N	Y	Y	Energy	Meeting
2014	3	26	edibLE16	N	Y	N	Food	Meeting
2014	3		MH Community Action Plan Survey	N	N	Y	Consultation	Document
2014	4	2	Facilitated Action Research	Y	Y	N	AR/L	Meeting
2014	4	3	edibLE16	N	Y	N	Food	Meeting
2014	4	9	Community Energy	N	Y	Y	Energy	Meeting
2014	4	14	SHP Energy Projects Approach	N	N	Y	Energy	Document
2014	4	23	edibLE16	N	Y	N	Food	Meeting
2014	4	30	Food Forum Steering Group	Y	Y	Y	Food	Meeting
2014	5	1	edibLE16	N	Y	N	Food	Meeting
2014	5	7	Community Energy	Y	Y	N	Energy	Meeting
2014	5	14	Partnership Board	Y	Y	Y	Governance	Meeting
2014	5	15	edibLE16	N	Y	N	Food	Meeting
2014	5	21	edibLE16	N	Y	N	Food	Meeting
2014	5	29	edibLE16	N	Y	N	Food	Meeting
2014	6	4	edibLE16	N	Y	Y	Food	Meeting
2014	6	5	Business Energy Efficiency	N	Y	N	Energy	Meeting
2014	6	9	Team AL – Green OH	N	Y	N	AR/L	Meeting
2014	6	12	edibLE16	N	Y	N	Food	Meeting
2014	6	18	edibLE16	N	Y	N	Food	Meeting
2014	6	26	edibLE16	N	Y	N	Food	Meeting

YYYY	MM	DD	Meeting / Document Type	Transcribed	Minutes	Papers	Theme	Type
2014	7	2	Business Energy Efficiency	N	Y	N	Energy	Meeting
2014	7	10	edibLE16	N	Y	N	Food	Meeting
2014	7	10	Community Energy	N	Y	Y	Energy	Meeting
2014	7	16	edibLE16	N	Y	N	Food	Meeting
2014	7	22	Team AL – Festival	N	Y	N	AR/L	Meeting
2014	7	23	Facilitated Action Research	Y	Y	N	AR/L	Meeting
2014	7	24	edibLE16	N	Y	N	Food	Meeting
2014	8	7	edibLE16	N	Y	N	Food	Meeting
2014	8	19	Team AL – Business Energy Club	N	Y	N	AR/L	Meeting
2014	8	20	Food Forum Steering Group	N	Y	N	Food	Meeting
2014	8	27	edibLE16	N	Y	N	Food	Meeting
2014	8	28	Business Energy Efficiency	N	Y	N	Energy	Meeting
2014	9	4	edibLE16	N	Y	N	Food	Meeting
2014	9	10	Partnership Board	Y	Y	Y	Governance	Meeting
2014	9	10	edibLE16	N	Y	N	Food	Meeting
2014	9	16	Community Energy – Vision	N	N	Y	Energy	Document
2014	9	24	edibLE16	N	Y	N	Food	Meeting
2014	9	29	Team AL – Business Energy Club	N	Y	N	AR/L	Meeting
2014	10	2	edibLE16	N	Y	N	Food	Meeting
2014	10	8	Food Forum Steering Group	N	Y	Y	Food	Meeting
2014	10	8	edibLE16	N	Y	N	Food	Meeting
2014	10	14	Futures Meeting	N	Y	N	Governance	Meeting
2014	10	16	edibLE16	N	Y	N	Food	Meeting
2014	10	22	edibLE16	N	Y	N	Food	Meeting
2014	10	28	Business Energy Efficiency	N	Y	Y	Energy	Meeting
2014	10	29	Community Energy	N	Y	N	Energy	Meeting
2014	10	30	edibLE16	N	Y	Y	Food	Meeting
2014	11	12	Team AL – Food Labelling Smnr	N	Y	N	AR/L	Meeting
2014	11	17	NEF Theory of Change	Y	N	Y	M&E	Meeting
2014	11	19	Partnership Board	Y	Y	Y	Governance	Meeting
2014	11	19	edibLE16	N	Y	N	Food	Meeting
2014	11	27	edibLE16	N	Y	N	Food	Meeting
2014	12	3	Team AL – Work with Business	N	Y	N	AR/L	Meeting

YYYY	MM	DD	Meeting / Document Type	Transcribed	Minutes	Papers	Theme	Type
2014	12	3	Food Forum Steering Group	Y	Y	Y	Food	Meeting
2014	12	11	edibLE16	N	Y	N	Food	Meeting
2014	12	17	Facilitated Action Research	Y	Y	N	AR/L	Meeting
2014	12	17	edibLE16	N	Y	N	Food	Meeting
2015	1	7	edibLE16	N	Y	N	Food	Meeting
2015	1	13	Team AL – Comm Garden	N	Y	N	AR/L	Meeting
2015	1	14	Food Map Working Group	Y	N	N	Food	Meeting
2015	1	14	edibLE16	N	Y	N	Food	Meeting
2015	1	15	Food Forum Steering Group	Y	Y	Y	Food	Meeting
2015	1	27	Business Energy Efficiency	N	Y	N	Energy	Meeting
2015	1	28	Team AL – Big Decision (Food)	N	Y	N	AR/L	Meeting
2015	1	28	edibLE16	N	Y	N	Food	Meeting
2015	2	11	Partnership Board	Y	Y	Y	Governance	Meeting
2015	2	11	edibLE16	N	Y	N	Food	Meeting
2015	2	12	Community Energy	N	Y	N	Energy	Meeting
2015	2	25	edibLE16	N	Y	N	Food	Meeting
2015	3	10	Community Energy	N	Y	N	Energy	Meeting
2015	3	25	Business Energy Efficiency	N	Y	N	Energy	Meeting
2015	3	27	Facilitated Action Research	Y	Y	N	AR/L	Meeting
2015	4	21	Team AL – Business Expo	N	Y	N	AR/L	Meeting
2015	4	30	Harborough Energy Club	N	Y	N	Energy	Meeting
2015	5	7	Data Collection Meeting	Y	N	N	M&E	Meeting
2015	5	12	Presentation to CLS	N	N	Y	CLS	Document
2015	5	13	Partnership Board	Y	Y	Y	Governance	Meeting
2015	5	20	Community Energy	N	Y	N	Energy	Meeting
2015	6	3	Facilitated Action Research	Y	N	N	AR/L	Meeting
2015	6	4	Team AL – Green OH & VolRct	N	Y	N	AR/L	Meeting
2015	6	17	Community Energy	N	Y	N	Energy	Meeting
2015	7	1	Business Energy Efficiency	N	Y	N	Energy	Meeting
2015	7	2	Team AL – Festival	N	Y	N	AR/L	Meeting
2015	7	22	Community Energy	N	Y	N	Energy	Meeting
2015	7	30	Harborough Energy Club	N	Y	N	Energy	Meeting
2015	8	19	Community Energy	N	Y	N	Energy	Meeting

YYYY	MM	DD	Meeting / Document Type	Transcribed	Minutes	Papers	Theme	Type
2015	9	10	Team AL – Comm Garden	N	Y	N	AR/L	Meeting
2015	9	10	Team AL – Arts Fresco	N	Y	N	AR/L	Meeting
2015	9	16	Partnership Board	N	Y	Y	Governance	Meeting
2015	9	23	Community Energy	N	Y	N	Energy	Meeting
2015	9	24	Facilitated Action Research	Y	Y	N	AR/L	Meeting
2015	9	24	DW to Harborough Energy	N	N	Y	Energy	Document
2015	10	13	Food Forum Steering Group	N	Y	Y	Food	Meeting
2015	10	13	Community Energy	N	N	N	Energy	Meeting
2015	10	20	Business Energy Efficiency	N	Y	N	Energy	Meeting
2015	11	25	Partnership Board	Y	Y	Y	Governance	Meeting
2015	12	12	Community Energy	N	Y	N	Energy	Meeting
2015	12	17	Mid-Term Review Staff	Y	N	N	M&E	Meeting
2015	12	17	Mid-Term Review Stakeholders	Y	N	N	M&E	Meeting
2016	1	7	Facilitated Action Research	Y	Y	N	AR/L	Meeting
2016	1	12	Community Energy	N	Y	N	Energy	Meeting
2016	1	29	Food Forum Steering Group	N	N	Y	Food	Meeting
2016	3	2	Partnership Board	Y	Y	Y	Governance	Meeting
2016	3	4	Facilitated Action Research	Y	N	N	AR/L	Meeting
2016	3	16	Business Energy Efficiency	N	Y	N	Energy	Meeting
2016	3	22	Legacy Theory of Change	Y	N	Y	M&E	Meeting
2016	5	12	Email correspondence GF	N	N	Y	M&E	Document
2016	6	9	Business Energy Efficiency	N	Y	N	Energy	Meeting
2016	6	22	Partnership Board	N	Y	Y	Governance	Meeting
2016	7	12	Team Focus Group – M&E	Y	N	N	M&E	Meeting
2016	7	14	Team AL – Festival	N	Y	N	AR/L	Meeting
2016	9	5	Community Cafe Workshop	N	Y	N	Cafe	Meeting
2016	9	7	Partnership Board	N	Y	Y	Governance	Meeting
2016	9	13	Facilitated Action Research	Y	N	Y	AR/L	Meeting
2016	10	14	Presentation to CLS	N	N	Y	CLS	Document
2016	10	21	Community Cafe Workshop	N	Y	N	Cafe	Meeting

Appendix G
Milestones in the Project's Developmental Trajectory

YEAR	MONTH	ACTIVITY	PROJECT THEME	STAKEHOLDERS
2011	10	CLS Project Fund launched by BIG Lottery	Funding	
2011	11	Initial Application for CLS Fund	Funding	TTMH
2012	2	Heidi Seary begins working with the project development	Partner Support	
2012	4	Bid Development Process commences	Funding	
2012	4	Bid development process meeting at Swan	Partner Support	
2012	4	First Community Assessment Tool undertaken with MH	Research	
2012	6	Bid development process comes to an end	Funding	
2012	7	Bid submission due date	Funding	
2012	9	Funding Outcome Announced	Funding	BIG, TTMH, RCC
2013	1	Project Manager begins	Staffing	
2013	2	SHP PM begins meetings with partners	Governance	
2013	7	SHP asks for interest in food hub	Food & Drink	Public, TTMH
2013	10	Family moves into Ecohome	Energy & Water	SLHA
2013	10	Water and Energy workshop	Energy & Water	Public
2013	10	Public Food & Drink Forum	Food & Drink	Public
2013	11	First Ecohome blog post	Energy & Water	SLHA
2013	12	First Xmas in Ecohome	Energy & Water	SLHA
2013	12	Ecohome Garden Designer sought	Energy & Water	SLHA
2014	1	Energy Forum Public Meeting	Energy & Water	Public, Businesses

2014	2	First edibLE16 Steering Group meeting	Food & Drink	edibLE16
2014	4	Market Hall re-opens	Food & Drink	edibLE16
2014	4	Second Community Assessment Tool undertaken with MH	Research	
2014	4	Energy & Water Efficiency Workshop	Energy & Water	Public
2014	5	Energy & Water Efficiency Workshop	Energy & Water	Public
2014	5	Local Food & Drink Open Evening	Food & Drink	Food Forum, edibLE16, Public
2014	5	Ecohome gardening event	Energy & Water	Ecohome, Public
2014	5	Love Where You Live & Work Litter Picking	Partner Support	Public, Harborough Improvement Team
2014	5	edibLE16 first presentation to SHP PB	Food & Drink	edibLE16
2014	6	Green Open Homes	Energy & Water	Green Open Homes, Public
2014	6	Energy & Water Efficiency Workshop	Energy & Water	Public
2014	6	Ecohome – First Public Opening	Energy & Water	SLHA
2014	7	I Love MH Festival	Engagement	Public
2014	7	Food & Drink Map (v.1) launched	Food & Drink	Food Forum, Ideal Marketing, Food Businesses
2014	7	Business Energy Club launched	Energy & Water	Local Business
2014	7	Show Me the Honey competition	Buzzing Borders	Public
2014	7	Waterloo Cottage Community Garden becomes available	Food & Drink	Food Forum, Waterloo Cottage Farm, Volunteers
2014	7	Master Gardener	Food & Drink	Growing Organic
2014	7	edibLE16 Pilot Customer	Food & Drink	edibLE16
2014	8	Harborough-By-The-Sea	Engagement	Public

2014	8	Rock on the Rec	Energy & Water	Public
2014	8	Lottery funding officer visits project	Monitoring & Evaluation	
2014	9	Business Energy Club first meeting	Energy & Water	Local Business, Gaia Active
2014	9	Energy & Water Efficiency Workshop	Energy & Water	Public
2014	9	Waterloo Cottage Community Garden Planning Meeting	Food & Drink	Waterloo Cottage Farm, Volunteers
2014	9	Bonfire & Supper Waterloo Garden	Food & Drink	Waterloo Cottage Farm, Volunteers
2014	9	edibLE16 Companies House Certificate	Food & Drink	edibLE16
2014	9	Free Loft & Cavity Wall Insulation	Energy & Water	Flourish Partnership
2014	9	Work begins at Waterloo Garden	Food & Drink	Waterloo Cottage Farm, Volunteers
2014	9	Deborah Bennett leaves SLHA	Partner Support	SLHA
2014	10	Free Food Labelling Seminar	Food & Drink	HDC Trading Standards, Chamber of Commerce, Local Food Business, Totally Locally
2014	10	Business Energy Efficiency Steering Group	Energy & Water	Local Business
2014	10	Steam Rally Clipston	Food & Drink	edibLE16
2014	10	Apple Day	Food & Drink	TTMH, Harborough Improvement Team
2014	10	Pilot Launch – edibLE16 first orders	Food & Drink	edibLE16
2014	10	Action For Market Towns becomes Towns Alive		SHP
2014	11	Business Energy Club	Energy & Water	Local Business, Gaia Active
2014	11	TTMH Social Evening & AGM	Partner Support	TTMH
2014	11	edibLE16 second up date to SHP PB	Food & Drink	edibLE16

2014	11	First order at edibLE16 from non-pilot customer	Food & Drink	edibLE16
2014	11	Community Fund process developed		
2014	11	Carbon savings target to be reduced	Energy & Water	
2014	11	Renegotiation of carbon savings target with Energy Savings Trust	Energy & Water	
2014	12	LCC Carbon Reduction Strategy	Energy & Water	LCC
2014	12	Harborough Energy co-op launched	Energy & Water	Harborough Energy
2014	12	State of Town report work put out to tender	Monitoring & Evaluation	
2014	12	Decide to open up decision about local food branding to public at the Big Decision	Food & Drink	Food Forum, edibLE16, Public
2015	1	The Big Decision on Future of Local Food & Drink	Food & Drink	Food Forum, edibLE16, Public
2015	1	Launch of Harborough Energy	Energy & Water	Harborough Energy
2015	1	Annual National Breakfast Week	Food & Drink	edibLE16
2015	1	Business Energy Efficiency Steering Group	Energy & Water	Local Business
2015	1	Applications open for Food & Drink Map (v.2)	Food & Drink	Food Forum, Ideal Marketing, Food Businesses
2015	1	Market Harborough Environment Group & TTMH form partnership	Partner Support	TTMH, MHEG
2015	1	Andrew Wallace leaves		
2015	1	Harborough Energy directors meet for first time	Energy & Water	Harborough Energy
2015	1	Breakfast of Champions – edibLE16	Food & Drink	edibLE16
2015	1	~9 or 10 volunteers at Waterloo Community Garden	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	2	Business Energy Club	Energy & Water	Local Business
2015	2	Recruitment Community Energy Development	Staffing	SHP

		Officer		
2015	2	Love Where You Live & Work Team Tour of the River	Partner Support	TTMH, MHEG
2015	2	Riverside clean up	Partner Support	TTMH, MHEG
2015	2	Market stall drop in	Partner Support	TTMH, MHEG
2015	2	Land agreement Waterloo Community Garden	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	2	Brief written for State of Town report tender	Monitoring & Evaluation	
2015	2	End of Year 2 Report to Lottery	Monitoring & Evaluation	
2015	2	Gartree project formally abandoned	Food & Drink	
2015	2	733 people participating & reporting improved knowledge & skills	Monitoring & Evaluation	NB: CONFIRM with EOY2 Lottery report
2015	2	Community Fund scheme idea put on hold pending capacity and experience with what it entails		
2015	2	Abandon funding for Harborough Currency feasibility study		TTMH
2015	2	Inception meeting with Rose Regeneration for State of Town report	Monitoring & Evaluation	Rose Regeneration
2015	2	Indicators for Outcome 3 reprofiled	Monitoring & Evaluation	
2015	2	Buzzing border indicator reprofiled	Monitoring & Evaluation	
2015	2	Agreed to drop 10% reduction in CO2 levels	Monitoring & Evaluation	
2015	2	Agreed to convert 1,000 tonnes of CO2 as a result of the project to amount saved through interventions and renewables	Monitoring & Evaluation	
2015	2	Most Significant Change technique introduced to PB for M&E	Monitoring & Evaluation	
2015	2	LM3 method introduced to PB for M&E	Monitoring & Evaluation	

2015	2	Noticed about external evaluations raised	Monitoring & Evaluation	
2015	2	Decision reached to invite edibLE16 and Harborough Energy representatives to sit on the SHP PB	Governance	EdibLE16, Harborough Energy
2015	3	Foxton Seedy Sunday	Partner Support	Morse bag team, MHEG, Master Composters and Gardeners, Coton Manor gardeners, The Wild Life Hospital, Leicestershire & Rutland Bee Keeping Association, edible16, Whetstone Community Allotment group, TTMH
2015	3	Festival of Cycling	Partner Support	Race Harborough
2015	3	Business Energy Efficiency Steering Group	Energy & Water	Local Business
2015	3	Waterloo Cottage Farm Community Garden Action Morning	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	3	Community Orchard at Symington's Rec	Food & Drink	Cube Youth, TTMH
2015	4	Open Spaces Strategy and Provision for Open Space Sport and Recreation: First Stage Issues Consultation	Partner Support	HDC, Public
2015	4	Buzzing Borders Talk	Buzzing Borders	Kibworth Garden Centre, Welland Rivers Trust, Farndon Fields Farm
2015	4	Harborough Business Expo	Partner Support	Chamber of Commerce
2015	4	Community Garden Action Day	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	4	Denise Marsdon joins		
2015	4	Food & Drink Map (v.2) launched	Food & Drink	Food Forum, Ideal Marketing, Food Businesses
2015	4	'Simply Delicious, Simply Local' Recipe Competition	Food & Drink	EdibLE16, Frances Quinn
2015	4	Planting along the River Welland	Partner Support	Public
2015	5	Green Open Homes	Energy & Water	Green Open Homes, Public

2015	5	Welland Rivers Trust Final Public Meeting	Partner Support	Welland Rivers Trust
2015	5	Waterloo Cottage Community Garden Action Days	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	5	Love Where You Live	Partner Support	MHEG
2015	5	Business Energy Club	Energy & Water	Sainsbury's, Local Business
2015	5	State of the Town Consultation	Monitoring & Evaluation	Rose Regeneration, Public
2015	5	'Learning to Grow Together – Supporting Community Gardening'	Partner Support	Leicestershire Master Gardeners, Garden Organic
2015	5	90 pledges on SHP website		
2015	5	Formative evaluation approach agreed	Monitoring & Evaluation	
2015	5	State of Town survey goes live	Monitoring & Evaluation	Rose Regeneration
2015	5	AMT/ PPP withdraws from SHP PB	Partner Support	SHP
2015	6	Open Farm Sunday	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	6	I Love MH Festival	Engagement	Public
2015	6	Market Harborough Carnival	Partner Support	Public
2015	6	I Love MH Festival	Engagement	Public
2015	6	HDC decide to put PV on Market Hall roof		
2015	7	Waterloo Cottage Community Garden Action Days	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	7	Business Energy Club	Energy & Water	Local Business
2015	7	Adoption of Climate Change Local Plan	Partner Support	HDC
2015	8	Closing Date – Show Me the Honey	Buzzing Borders	Public
2015	8	Harborough-By-The-Sea	Engagement	Public

2015	8	Recruitment for Maternity Leave Cover	Staffing	SHP
2015	8	Market Harborough Food & Drink Festival	Food & Drink	edibLE16
2015	9	Arts Fresco	Food & Drink	Food Forum, edibLE16, Public
2015	9	Community energy fortnight	Energy & Water	Harborough Energy
2015	9	Home Energy Efficiency Clipston WI	Energy & Water	Clipston WI
2015	9	Lubenham Scarecrow Festival	Food & Drink	edibLE16
2015	10	Alex Hopkinson joins as maternity cover for EC		
2015	10	Harborough Energy First Share Offer – PV on Robert Smythe	Energy & Water	Harborough Energy
2015	10	Ageing Well Event	Partner Support	Congregational Church, HealthWatch Leicestershire, Dementia Harborough
2015	10	Saving Our Planet – Climate change – a matter of faith	Partner Support	SHP, TTMH, Methodist Church
2015	10	Polytunnel at Waterloo Community Garden	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	10	Apple Day	Food & Drink	edibLE16, TTMH
2015	10	Billesdon Farmers' Market	Food & Drink	edibLE16
2015	11	Harborough Energy Summit	Energy & Water	Public, Andrew Granger
2015	11	Composting Master Class	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	11	Harvest at Waterloo Community Garden	Food & Drink	Waterloo Cottage Farm, Volunteers
2015	11	edibLE16's 1st birthday celebration	Food & Drink	edibLE16
2015	11	Harborough Energy First Share Offer Closes	Energy & Water	Harborough Energy
2015	11	Move for Movember: Men's Activity Week	Food & Drink	edibLE16
2015	11	edibLE16 is formally represented on the SHP PB	Governance	edibLE16

2015	11	Harborough Energy is formally represented on the SHP PB	Governance	Harborough Energy
2015	11	Initial conversations about local food branding with businesses begins	Food & Drink	Local Business
2015	12	Market Harborough Christmas Fayre	Engagement	Public
2015	12	Christmas "treecycling" with LOROS	Partner Support	LOROS
2015	12	Simply Simon’s Up For Sale		Public
2015	12	Domestic Fuel & Heating Costs service	Energy & Water	HDC, Flourish Partnership
2015	12	Robert Smythe pull out of solar PV community owned energy scheme	Energy & Water	Harborough Energy
2016	1	Breakfast Week	Food & Drink	edibLE16
2016	1	edibLE16 Market Research	Food & Drink	edibLE16
2016	1	Breakfast with edibLE16	Food & Drink	edibLE16
2016	1	Domestic Fuel & Heating Costs service	Energy & Water	HDC, Flourish Partnership
2016	1	Legacy theory of change workshop with SHP team	Monitoring & Evaluation	
2016	2	Transition Leicester Permaculture Design Course	Partner Support	Public
2016	2	Waterloo Community Garden Action Day	Food & Drink	Waterloo Cottage Farm, Volunteers
2016	2	Incredible Edible Consultation Opens	Food & Drink	Public
2016	2	Market Harborough Energy Club	Energy & Water	Local Business
2016	2	Domestic Energy Efficiency Grant Sourcing Telephone Support	Energy & Water	Flourish Partnership, HDC
2016	2	‘Britain’s Best Small Indoor Market’ Award	Partner Support	
2016	2	Energy Reduction Workshop	Energy & Water	Local Business, Public
2016	2	Domestic Fuel & Heating Costs service	Energy & Water	HDC, Flourish Partnership

2016	2	Meet the Producer – Newlands Dairy	Food & Drink	edibLE16
2016	2	SLHA recommits to staff training & tenant handbook	Energy & Water	SLHA
2016	2	Energy efficiency advice half-days	Energy & Water	HDC, Flourish Partnership, SHP
2016	3	Foxton Seedy Sunday	Partner Support	Morse bag team, MHEG, Master Composters and Gardeners, Coton Manor gardeners, The Wild Life Hospital, Leicestershire & Rutland Bee Keeping Association, edible16, Whetstone Community Allotment group, TTMH
2016	3	State of Town report published	Monitoring & Evaluation	Rose Regeneration, Public
2016	3	Domestic Fuel & Heating Costs service	Energy & Water	HDC, Flourish Partnership
2016	3	Meet the Producer – Waterloo Cottage Farm	Food & Drink	edibLE16
2016	3	Shopping Buddies scheme launched	Food & Drink	edibLE16
2016	3	Waterloo Community Garden Action Day	Food & Drink	Waterloo Cottage Farm, Volunteers
2016	3	Eat with edibLE16 – Waterloo Cottage Farm	Food & Drink	EdibLE16, Waterloo Cottage Farm
2016	3	The Energy Clinic	Energy & Water	HDC, Flourish Partnership, Billesdon Parish Council
2016	3	Moth monitoring	Partner Support	County Moth Recorder
2016	3	Legacy planning meeting		SHP, RCC
2016	3	End of Year 3 Report to Lottery	Monitoring & Evaluation	BIG Lottery
2016	3	East Midlands Today slot on SHP		
2016	3	Support offered for SLHA Affordable Warmth strategy	Energy & Water	SLHA
2016	4	Meet the Producer – Well Roasted Coffee	Food & Drink	edibLE16

2016	4	Home delivery trial	Food & Drink	edibLE16
2016	4	Eco-Question Time	Partner Support	
2016	4	Waterloo Community Garden Planning Group meeting	Food & Drink	Waterloo Cottage Farm, Volunteers
2016	4	edibLE16 Market Research starts	Food & Drink	EdibLE16, DMU
2016	4	Third Community Assessment Tool undertaken in MH		
2016	4	Leicestershire County Council SHIRE Climate Change Grants	Energy & Water	LCC
2016	5	Green Open Homes	Energy & Water	Green Open Homes, Public
2016	5	Eat & Walk: The Judith Stone	Food & Drink	Race Harborough
2016	5	edibLE16 Market Research ends	Food & Drink	EdibLE16, DMU
2016	5	Eat with edibLE16 – FarrinHeight Foods	Food & Drink	edibLE16, FarrinHeight Foods
2016	6	Open Farm Sunday	Food & Drink	Waterloo Cottage Farm, Volunteers
2016	6	The Efficiency Network launches	Energy & Water	Chamber of Commerce
2016	6	The Carnival of Running	Partner Support	Race Harborough
2016	6	Explore Harborough website launched	Partner Support, Food & Drink	HDC, Leicester Shire Promotions
2016	6	£2 cash-back on orders less than £10	Food & Drink	edibLE16
2016	6	SHP Volunteer & Supporter celebration evening	Food & Drink	Duncan Murray, HDC, The Efficiency Network, Waterloo Cottage Farm
2016	6	Meet the Producer – The Market Harborough Brewery	Food & Drink	edibLE16
2016	6	Raised bed allotments available	Food & Drink, Partner Support	Market Harborough & the Bowdens Charity
2016	6	Alastair Campbell Ideal Marketing update to SHP PB	Engagement	Ideal Marketing

2016	6	Incredible Edible decision pending HDC	Food & Drink	HDC
2016	6	SLHA merges with Waterloo Housing Group	Energy & Water	SLHA
2016	6	Planning for summative evaluation commences	Monitoring & Evaluation	Rose Regeneration
2016	7	I Love MH Festival	Engagement	Public
2016	7	Screening of "This Changes Everything"	Partner Support	TTMH, Green Party
2016	9	The Efficiency Network	Energy & Water	Chamber of Commerce
2016	9	Supper at Waterloo Cottage Farm	Food & Drink	Waterloo Cottage Farm, Volunteers
2016	9	Arts Fresco – Local food & drink area	Food & Drink	Food Forum, edibLE16, Public
2016	9	Community Cafe Workshop	Engagement	Public
2016	9	Agreement secured with Woodnewton Academy for community owned PV	Energy & Water	Harborough Energy, Woodnewton Academy
2016	9	57kW CO PV at Woodnewton Academy, Corby	Energy & Water	Harborough Energy, Woodnewton Academy
2016	9	"Feel Alive From 65" Waterloo Community Garden	Food & Drink	Waterloo Cottage Farm, Volunteers
2016	9	The Great British High Street Awards starts	Partner Support	Local Business
2016	9	Cllr Bilbie attends SHP PB meeting	Governance	HDC
2016	10	Waterloo Community Garden Fruit Picking – Scrumping	Food & Drink	Waterloo Cottage Farm, Volunteers
2016	10	Leicestershire County Council have Rural Skills courses	Partner Support	LCC, Public
2016	10	The Great British High Street Awards ends	Partner Support	Local Business
2016	10	Eco Churches	Partner Support	Methodist Church Centre, Public
2016	10	Apple Day	Partner Support	TTMH
2016	10	10.4kW CO PV at Archway Health Hub, Market Harborough	Energy & Water	Harborough Energy, Archway Health Hub

Appendix H

Code Dictionary using sense-making and framing concepts

Thematic Coding Dictionary

1. Impacts

- Conversation about outcomes and indicators.
- Code talk about relevance/ appropriateness of indicators under both 5.1. Diagnostic Framing and 1.3. Relevance.

1.1. Definition → how are indicators understood (e.g., skills)
1.2. Collection → how are impacts evaluated and data sources accessed
1.3. Relevance → how well do indicators 'fit' project's scope, scale, &/ or remit

2. Activities

- Conversation about what project is doing practically in terms of themes

2.1. Energy → what is being done with respect to energy-related activities
2.2. Food → what is being done with respect to food-related activities
2.3. Other → what is being done with respect to all other activities

3. Learning

- Conversations about any aspects of learning from experience &/ or other sources (e.g., workshops, articles, feasibility studies, etc.)

3.1. Single Loop → modifying approach to an activity or impact evaluation
3.2. Double Loop → modifying assumptions about an activity or impact evaluation
3.3. Instruction → acquiring information from an external source (e.g., training)

4. Knowledge Type

- Type of knowledge referred to in any given conversation about any given topic, theme or coded category

4.1. Factual → propositional, explicit claims that can be verified
4.2. Practical → capacity, skills-based, know-how
4.3. Empirical → knowledge by acquaintance, sense data &/ or experience
4.4. Belief → assumption, anecdote, unverifiable

5. Framing

- Conversations that provide a meta-narrative set of guides to how a set of experiences or a proposition is to be understood/ interpreted
- This code is used in conjunction with other code categories as a meta-code

5.1. Diagnostic → is the framing describing a problem/ constraint/ difficulty
5.2. Prognostic → is the framing describing a solution/ remedy/ amelioration

6. Metaphor

- Conversations that use terminology from one (source) domain to describe aspects of a second (target) domain.

7. Programme Theory (Theory of Change)

- Conversations that describe the approach adopted in realising the project's brief and remit

7.1. Enabling → supporting, building local capacity, facilitating (longer-term)
7.2. Delivery → doing for or on behalf of/ building something (short-term)
7.3. Unclassified → where distinction is mixed or unclear

8. Knowledge Area

- Refers to specific task or activity participants and team undertake within an organisation (Lettieri, Borga and Savoldelli, 2004);

8.1. Accnt-Admin → routine office-based; budget; form-completion
8.2. Managerial → project management; decision-making; governance; chairing
8.3. Teach-Train → workshops; instructional; seminars; presentations
8.4. Funding → acquisition/ negotiation of funding; crowd source investments
8.5. Operational → procedures & compliance; meeting attendance (non-chair)
8.6. Miscellany → likely informal and not classified elsewhere (NB: Memo type)

9. Sense-Making

- Interpretations of events relative evaluating impacts and direction of change

9.1. Consistent → developments consistent with intended objectives
9.2. Dissonant → developments contrary to intended objectives
9.3. Intended → consequences or outcomes were anticipated beforehand
9.4. Unintended → consequences or outcomes were NOT anticipated beforehand
9.5. Non-Sense → development appears relevant but cannot yet be classified
9.6. Relational → descriptions of relational qualities (e.g., trust, credibility, ethics)

Appendix I

Code Dictionary using enactive cognitive science concepts

Code Category: 1. Identity

1.1. Ethos and approach – references in the transcripts pertaining to how the project describes its approach and operational ethos (values, aspirations, etc.)

1.2. Self-reference – any examples in the transcripts in which the project refers to itself as either agent or object

1.3. Other reference (to SHP) – examples from the transcripts in which the project identifies how other actors in its environment refer to it (positively, negatively, or neutrally)

1.4. Beyond scope (of the project) – this code tracks examples of what the project regards as beyond its scope for action. This suggests the existence of a boundary, a necessary condition for autonomy.

1.5. Identity and boundary other – this is a broad unspecified code to reflect anything that may not fit the previous four codes but is still relevant.

Code Category: 2. Transformation

2.1. Change in structure – from section 7.5.1., structure is distinct from organisation, where the former refers to the specific components that make a given system a member of a particular class (organisation). This was illustrated by means of the Ship of Theseus problem. In this code, examples are sought that suggest changes in the personnel or other structural modifications that do not alter the organisational identity of the project.

2.2. Nature of change – this code captures narratives about the experience or understanding the processes of change, in general or with reference to specific cases.

Code Category: 3. Reflexivity

3.1. Defining purpose – Teleology – this code is invoked to capture examples of how the project deliberately seeks to alter the course of its

developmental trajectory, how it becomes agentive rather than passively following the dictate of how the project was set up initially.

3.2. Causality – this code captures examples that illustrate how the project thinks events unfold with respect to a theory of change (programme logic).

3.3. Reflective practice – these are illustrations of ways that the project practitioners, Board members, and other stakeholders in transcribed meetings think (reflect) on what it is that the project is engaged in, whether this is critical, encouraging, or value neutral.

3.4. Dealing with uncertainty – in complex environments, uncertainty is common given non-linear causality, multiple feedback loops, and emergent properties that characterise such contexts. This code tracks how the project responds to and deals with this uncertainty, since too much uncertainty can be paralysing to decision-making.

3.5. Authority and power – reflexivity is not only an intervention into the developmental trajectory of a system, but in human practice, it also involves issues of who has the power and authority to introduce or constrain change, and how this is used to include or exclude stakeholders, who has a voice and who is silenced from having a say. In recognition of Foucault's seminal work on the constitutive power arising from knowledge effects (Foucault, 1980; Hajer and Versteeg, 2005), this code tracks the relative influences of how power is exercised and its relation to both decisions as well as knowledge claims.

Code Category: 4. Viability

4.1. Relevance to perceived need – this draws on the terminology of social movements research, and considers how the project understands the nature of the problems with respect to its diagnostic framing of what is needed by the communities that comprise Market Harborough.

4.2. Contribution to prognostic frame – using the terminology from social movements research, this code tracks how the project identifies

the degree to which it is aligning its teleology with an amelioration of the problem as it understands the nature of that problem.

4.3. Legacy planning – this code is invoked for those examples of dialogue that concern what legacy the project is to have following the end of its funding period. For the project to establish its legacy is to be able to maintain its viability as an entity without the protection of being fully funded.

4.4. Threats to viability – these examples illustrate how the project identifies particular threats to its continued existence, either with respect to its post-funding legacy or in terms of becoming irrelevant even when funded.

Code Category: 5. Design

5.1. Single loop learning – this concept was introduced into the literature originally by Bateson (1972), but was picked up and popularised in the management literature by Argyris and Schön (Argyris and Schön, 1978), and is characterised by the process of revisiting previously made decisions in the light of new information. A simple example is not ordering the same item from a menu following the experience of not enjoying it when previously ordered. This code tracks examples of how the project reviewed the decisions it made, regardless of whether it decides to do something differently as a result.

5.2. Double loop learning – this is the second of the concepts Argyris and Schön (1978) picked up from Bateson and introduced into the corporate management literature. This concept refers to the process of revisiting one's assumptions about how something works, and involves challenging one's beliefs. Consequently, it is not as frequently evidenced as single loop learning. This code tracks examples of how the project reviews its assumptions and its beliefs, its founding principles, in light of new evidence or information.

5.3. Learning to learn – Bateson (1972, 1979) referred to this process as ‘deutero’ learning, and this refers to a meta-process through which one’s way of learning is itself reviewed. This is quite rare in practice, as it involves a qualitative shift in how a person or system approaches its acquisition and processing of information, and is therefore a more profound shift than double loop learning. This code tracks any examples of the project shifting the way it goes about acquiring and using information.

5.4. Evidence-based strategy – this code tracks illustrations of how the project uses its learning to influence what it does and how it does it.

5.5. Design other – this final code is to track any examples of learning and project design that the preceding four codes have not captured.

Code Category: 6. Reciprocal Interactions

6.1. Influence on medium – this code identifies examples that describe how the project identifies any influences it has had on Market Harborough and its communities, and comes the closest to recognising impacts.

6.2. Influence on SHP – this tracks influences arising from outside the project’s boundaries and how they shape, constrain, or provide opportunities for the project’s work.

6.3. Ethics and trust – a significant implication of enactive and autopoietic theory is that these approaches locate the realisation of systems in the context of other systems as a fundamentally and primarily ethical process of becoming *with* others. This code tracks illustrations of how the project recognises and acts in accordance with an ethical sensibility and awareness and seeks to develop and maintain trust as a specific quality of relationship.

Appendix J:

Screenshot of Coding in RQDA

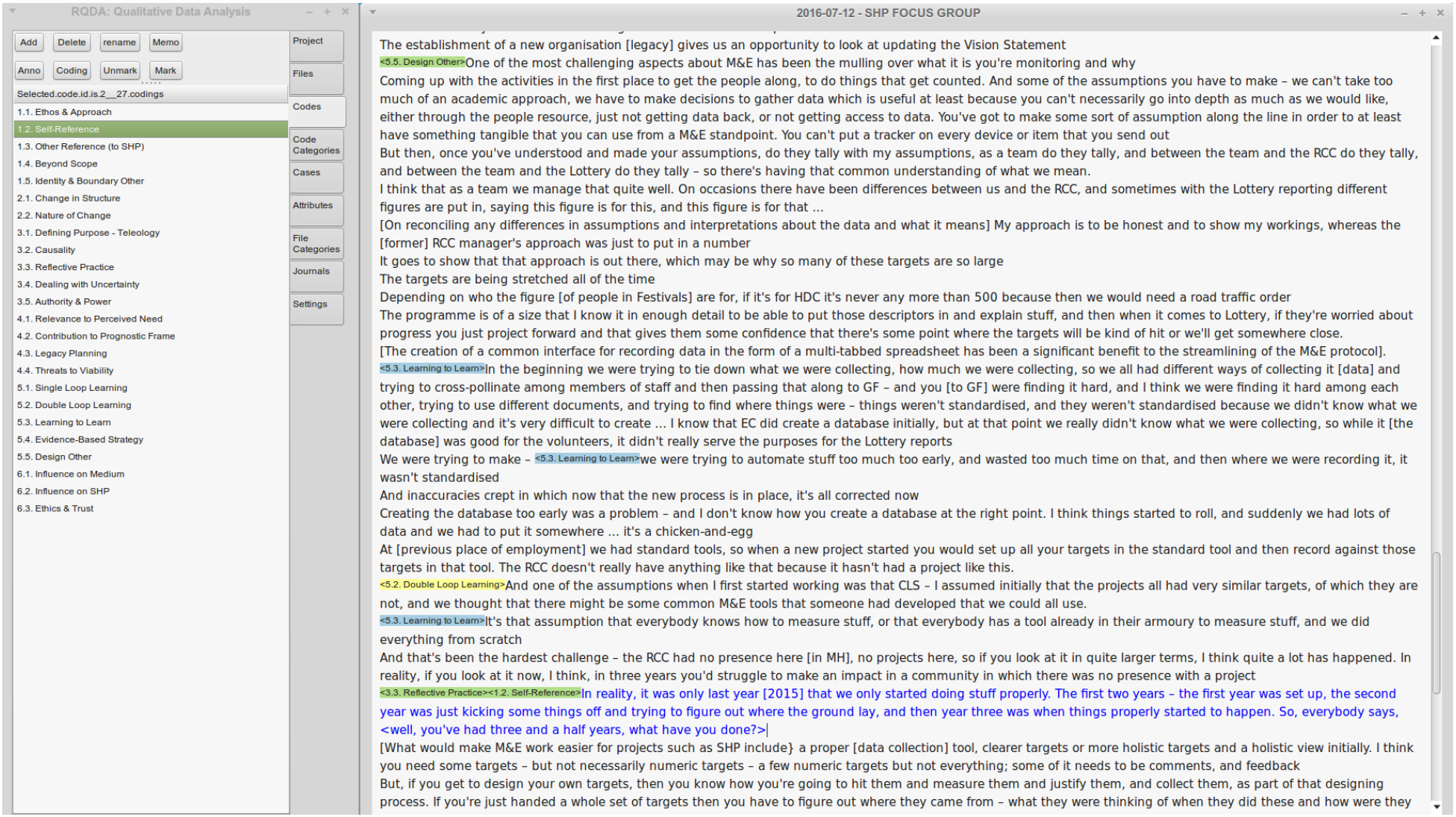

Figure I.1 Screenshot of RQDA coding session. Left window shows code dictionary in use, and main window shows section of transcript from an Action Research session